XM-2000R

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

Photo: AEP model

SPECIFICATIONS

Circuit system	OTL (output transformerless) circuit Pulse power supply
Inputs	RCA pin jacks
Outputs	Speaker terminals RCA pin jacks
Speaker impedance	1 – 8 Ω (stereo) 2 – 8 Ω (when used as a bridging amplifier)
Maximum outputs	700 W × 2 (at 4 Ω) 2500 W × 1 (monaural, at 4 Ω)
Rated outputs (supply voltage at 14.4 V)	
	300 W × 2 (20 Hz – 20 kHz, 0.04 % THD, at 4 Ω) 600 W × 2 (20 Hz – 20 kHz, 0.1 % THD, at 2 Ω) 1000 W × 2 (20 Hz – 20 kHz, 0.1 % THD, at 1 Ω)
Frequency response	7 – 100 kHz (+0, −3 dB)
Harmonic distortion	0.005 % or less (at 1kHz, 4 Ω)
Input level adjustment range	0.2 – 4.0 V (RCA pin jacks)
High-pass filter	50 – 200 Hz, –12 dB/oct
Low-pass filter	50 – 200 Hz, –12 dB/oct
Low boost and cut	0 – 10 dB (7 – 40 Hz)
Power requirements	12 V DC car battery (negative ground)
Power supply voltage	10.5 – 16 V
Current drain	at rated output: 45 A/ch (at 4Ω) Remote input: 2 mA
Dimensions	Approx. 726 × 115 × 451 mm (w/h/d) (28 5/8 × 4 5/8 × 17 7/8 in.) not incl. projecting parts and controls
Mass	Approx. 27 kg (59 lb. 8 oz.) not incl. accessories
Supplied accessories	Mounting screws (8), Hexagonal wrench [2.5 mm (1), 4 mm (1)]

Design and specifications are subject to change without notice.

STEREO POWER AMPLIFIER

MICROFILM

SONY®

TABLE OF CONTENTS

1. SERVICING NOTES 3

2. GENERAL 4

3. DISASSEMBLY 8

4. ELECTRICAL ADJUSTMENTS 9

5. DIAGRAMS

5-1. Note for Printed Wiring Boards and Schematic Diagrams 12
5-2. Printed Wiring Board – PRE AMP Section – 13
5-3. Schematic Diagram – PRE AMP Section – 15
5-4. Printed Wiring Boards – PROTECT Section – 17
5-5. Schematic Diagram – PROTECT Section – 19
5-6. Printed Wiring Boards – POWER AMP Section (Component Side) – 21
5-7. Printed Wiring Boards – POWER AMP Section (Conductor Side) – 23
5-8. Schematic Diagram – POWER AMP Section – 25

6. EXPLODED VIEWS 28

7. ELECTRICAL PARTS LIST 32

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
SERVICING NOTES

PROTECTOR

This set has protection circuit and indicators. When trouble occurs, LED indicates status.
Each LED lights up in green during normal operation. The color will change green to flashing red when trouble occurred.

LED	Problem	Solution
OFFSET (D851)	• DC voltages are applied to the SPEAKER OUT terminal (CN812, CN813) • DC voltages out to the SPEAKER OUT terminal cause the internal circuit troubled	Turn off the power switch. Make sure the speaker cord and ground lead are securely connect
OVER CURRENT *1 (D852)	• The SPEAKER OUT terminal is shorted • The internal output element is troubled	Turn off the power switch. Make sure the SPEAKER OUT terminal are not short-circuited
THERMAL (D855)	• The temperature rises to unsafe level	The set heats up abnormally • Stereo operation: 1 to 8 Ω • Bridging operation: 2 to 8 Ω Make sure to place the set in a ventilated location (The color will return to green when the temperature returns to normal)

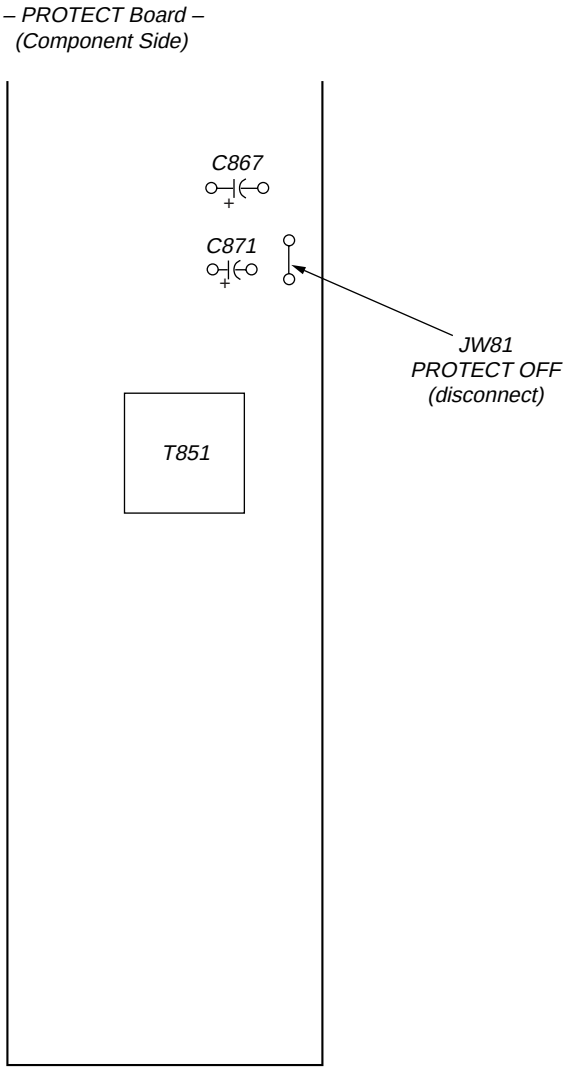
*1: Does not work in no-signal condition.

TEST TONE

To check the system's status, activate the built in transmitter then press the TEST TONE button (S801). If the tone is heard, the set is functioning normally.

CANCELLING THE PROTECTOR AT THE SERVICE

Note: When check the protector, do not cancel it.
In case of a failure in this set, the protection circuit functions to prevent a speaker damage and turn off the power to stop the set working.
To make the set work at the service, disconnect the JW81 of the PROTECT board and turn on the power.
Be sure to reconnect the JW81, after the completion of service.



SECTION 2
GENERAL

This section is extracted from instruction manual.

Features

- RMS (root-mean-square) power output of 1000 watts per channel (at 1 ohms).
- This unit can be used as a bridging amplifier with a maximum output of 4000watts (at 2 ohms).
- Built-in variable LPF (Low-pass filter), HPF (High-pass filter) and low boost circuit.
- The DIRECT switch can be used to bypass the low-pass filter, high-pass filter for more enjoyable high quality sound.
- Dual mode connection possible for a multi-speaker system.
- Protection circuit and indicator provided.
- Pulse power supply* for stable, regulated output power.
- Built-in line output.
- New circuit which removes the source resistance from the final MOS FET output stage, and drives the speaker directly.

* ***Pulse power supply***
This unit has a built-in power regulator which converts the power supplied by the DC 12 V car battery into high speed pulses using a semiconductor switch. These pulses are stepped up by the built-in pulse transformer and separated into both positive and negative power supplies before being converted into direct current again. This is to regulate fluctuating voltage from the car battery. This light weight power supply system provides a highly efficient power supply with a low impedance output.

Caractéristiques

- Puissance de sortie RMS (valeur quadratique moyenne) de 1000 watts par canal (1 ohm).
- Cet appareil peut être utilisé comme amplificateur de pontage d'une sortie maximale de 4000 watts (à 2 ohms).
- Filtre passe-bas (LPF), filtre passe-haut (LPH) variables et circuit d'amplification des graves intégrés.
- Le commutateur DIRECT peut être utilisé pour contourner le filtre passe-bas, le filtre passe-haut, et pour le circuit d'égalisation, afin d'optimiser la qualité sonore.
- Possibilité de connexion double mode pour un système à plusieurs haut-parleurs.
- Avec circuit et indicateur de protection.
- Alimentation électrique par impulsions* pour une puissance de sortie stable, régulée.
- Sortie de ligne intégrée.
- Nouveau circuit supprimant la résistance source du niveau de sortie MOS FET final et entraîne directement le haut-parleur.

* ***Alimentation électrique par impulsions***
Cet appareil est équipé d'un régulateur de puissance intégré qui convertit la puissance fournie par une batterie de voiture de 12 V CC en impulsions ultra-rapides au moyen d'un commutateur à semi-conducteur. Ces impulsions sont amplifiées par le transformateur d'impulsions intégré et séparées en alimentation positive et négative avant d'être reconverties en courant continu. Ce processus permet de compenser les fluctuations de tension provenant de la batterie de la voiture. Ce système d'alimentation de faible poids assure une alimentation électrique très efficace pour une sortie d'impédance faible.

Location and Function of Controls

1 POWER Indicator
The unit is provided with separate circuits for left and right built-in channels. This lights up when the power is being supplied to each channel.

2 PROTECTOR indicator
- OVER CURRENT lights up in green during normal operation. The color will change from green to flashing red when receiving a signal too powerful.
- OFF SET lights up green during normal operation. The color will change from green to flashing red when the voltage going out to the speaker terminal or the pin jack is too high .
- THERMAL lights up in green during normal operation. The color will change from green to flashing red when the temperature rises to an unsafe level. The color will return to green when the temperature returns to normal.

3 LEVEL adjustment control
The input level can be adjusted with this control when using source equipment made by other manufacturers. Turn it to MAX when the output level of the car audio seems low.

4 BOOST LEVEL (Low boost level) control
Amplifies the frequencies set by BOOST FREQ./LOW CUT FREQ. adjustment control ([5])up to a maximum of 10dB.

5 BOOST FREQ./LOW CUT FREQ. (Subsonic Filter) adjustment control
Sets the boost frequency (7 – 40 Hz) for BOOST LEVEL (low boost level) control.

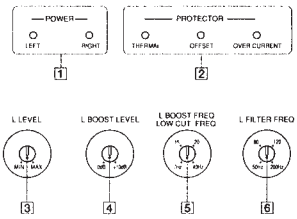
6 FILTER FREQ. (Cut-off frequency) adjustment control
Sets the cut-off frequency (50–200 Hz) for the low-pass or high-pass filters.

7 DIRECT switch
When the DIRECT switch is set to ON, the signal will not go through the low-pass filter, high-pass filter, or low boost circuit.

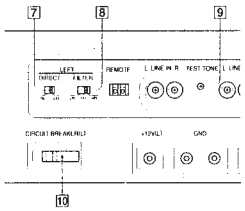
8 FILTER selector switch
When the switch is in the LPF position, the filter is set to low-pass. When in the HPF position, the filter is set to high-pass.

9 TEST TONE button
To check the system's status, activate the built in transmitter then press the TEST TONE button. If the tone is heard, the unit is functioning normally.

10 CIRCUIT BREAKER



The illustration above is for the LEFT channel.
L'illustration ci-dessus concerne le canal LEFT.



Emplacement et fonction des commandes

1 Indicateur POWER
L'appareil est équipé de circuits séparés pour les canaux gauche et droit intégrés.
Il s'allume lorsque chaque canal est alimenté.

2 Indicateur PROTECTOR
- OVER CURRENT s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge clignotant lors de la réception d'un signal trop puissant.
- OFFSET s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge clignotant lorsque la tension transmise via la borne de haut-parleur ou la prise à broche est trop élevée.
- THERMAL s'allume en vert en cours de fonctionnement normal. La couleur passe du vert au rouge clignotant lorsque la température dépasse le niveau de sécurité. La couleur revient au vert dès que la température est redevenue normale.

3 Commande de réglage LEVEL
Le niveau d'entrée peut se régler avec cette commande lors de l'utilisation d'équipements source d'autres fabricants. Mettez-le sur MAX lorsque le niveau de sortie de l'installation audio paraît faible.

4 Commande BOOST LEVEL (niveau d'amplification des graves)
Amplifie les fréquences réglées à l'aide de la commande BOOST FREQ./LOW CUT FREQ. ([5]) de 10 dB au maximum.

5 Commande de réglage BOOST FREQ./LOW CUT FREQ. (filtre subsonique)
Règle la fréquence d'amplification (7 – 40 Hz) pour la commande BOOST LEVEL (niveau d'amplification des graves).

6 Commande de réglage FILTER FREQ. (fréquence de coupure)
Règle la fréquence de coupure (50–200 Hz) des filtres passe-bas ou passe-haut.

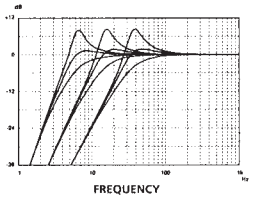
7 Commutateur DIRECT
Lorsque le commutateur DIRECT est réglé sur ON, le signal ne passe pas par le filtre passe-bas, le filtre passe-haut et le circuit d'égalisation.

8 Sélecteur FILTER
Lorsque le commutateur est en position LPF, le filtre est mis sur passe-bas. Lorsqu'il est en position HPF, le filtre est mis sur passe-haut.

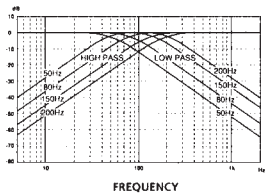
9 Touche TEST TONE
Pour contrôler le statut du système, activez le transmetteur intégré et appuyez ensuite sur la touche TEST TONE. Si vous entendez une tonalité, c'est que l'appareil fonctionne normalement.

10 CIRCUIT BREAKER (Coupe-circuit)

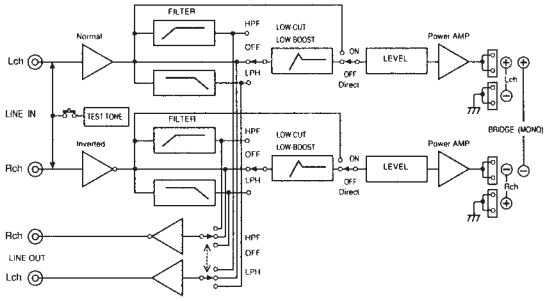
LOW BOOST•LOW CUT



Cut-off frequency/Fréquence de coupure



Circuit Diagram / Schéma du circuit du circuit



Installation

Before Installation

- As the unit is heavy (approx. 27kg (59 lb. 8 oz)), it is recommended that the installation and conveyance be done by two persons.
- Choose the mounting location carefully so that the unit will not interfere with the normal movements of the driver and so it will not be exposed to direct sunlight or hot air from the heater.
- Do not install the unit under the floor carpet, where the heat dissipation from the unit will be considerably impaired.

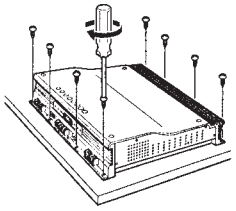
First, place the unit where you plan to install it, and mark the positions of the four screw holes on the surface of the mounting board (not supplied). Then drill the holes approximately 3 millimeters (mm) in diameter and mount the unit onto the board with the supplied mounting screws. The supplied mounting screws are 15 mm long, therefore, make sure that the mounting board is thicker than 15 mm.

Installation

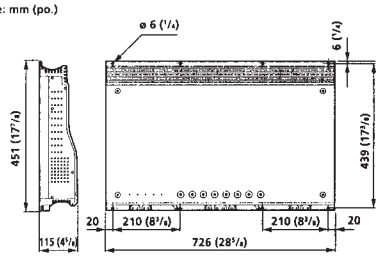
Avant l'installation

- Etant donné que l'appareil est lourd (environ 27 kg (59 li. 8 on.)), il est préférable que l'installation et le transport soient assurés par deux personnes.
- Choisissez avec soin l'emplacement de sorte que l'appareil ne gêne pas les mouvements du conducteur et qu'il ne soit pas exposé au soleil ou à l'air chaud du chauffage.
- N'installez pas l'appareil sous le tapis de sol car la dissipation thermique ne pourrait pas se faire correctement.

Présentez d'abord l'appareil à l'endroit où vous voulez l'installer et tracez un repère de positionnement pour les quatre vis sur la plaque de montage (non fournie). Percez des trous d'environ 3 millimètres (mm) de diamètre, puis fixez l'appareil à l'aide des vis fournies. Celles-ci font 15 mm de long; vérifiez, par conséquent, que la plaque fait au moins 15 mm d'épaisseur.



Unit : mm (in.)
Unité: mm (po.)



Connections

Precautions

- This unit is designed for negative ground 12 V DC operation only.
- Use speakers with an impedance of 1 to 4 ohms (2 to 8 ohms when used as a bridging amplifier).
- Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers.
- Avoid installing the unit in areas subject to:
  — high temperatures such as from direct sunlight or hot air from the heater
  — rain or moisture
  — dust or dirt.
- If your car is parked in direct sunlight and there is a considerable rise in temperature inside the car, allow the unit to cool down before use.
- Be sure to install the unit horizontally so that the air duct of the cooling fan or its fin will not be covered with carpet etc.
- The cooling fan operates when the temperature inside the unit rises to a certain level. It is not a malfunction if the cooling fan does not operate when you turn on the power.
- If this unit is placed too close to the car radio or antenna, interference may occur. In this case, relocate the amplifier away from the car radio or antenna.
- If no power is being supplied to the master unit, check the connections.
- This power amplifier employs a protection circuit* to protect the transistors and speakers if the amplifier malfunctions. Do not attempt to test the protection circuit* by covering the heat sink or connecting improper loads.
- Do not use the unit on a weak battery as its optimum performance depends on a good power supply.
- For safety reasons, keep your car audio volume moderate so that you can still hear sounds outside your car.

Protection circuit
This amplifier is provided with a protection circuit that activates in the following cases:
— when the unit is overheated
— when a DC current is generated
— when the speaker terminals are short circuited.
The color of the PROTECTOR indicator will change from green to red, and the unit will shut down.
If this happens, turn off the connected equipment, take out the cassette tape or disc, and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools down before use.

If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Connexions

Précautions

- Cet appareil est conçu pour fonctionner uniquement sur courant continu de 12 volts avec masse négative.
- Utilisez des haut-parleurs d'une impédance de 1 à 4 ohms (2 à 8 ohms en cas d'utilisation comme amplificateur en pont).
- Ne raccordez pas de haut-parleurs actifs (avec amplificateur intégré) aux bornes de haut-parleurs de cet appareil; ils pourraient être endommagés.
- N'exposez pas l'appareil:
  — à des températures élevées, comme en plein soleil ou près de la sortie d'air chaud du chauffage;
  — à l'humidité ou à la pluie;
  — à la poussière ou à la saleté.
- Si votre voiture était garée en plein soleil et que la température a considérablement augmenté à l'intérieur, laissez refroidir l'appareil avant de l'utiliser.
- Veillez à installer l'appareil horizontalement de façon à ce que le conduit d'air du ventilateur de refroidissement ou ses ailettes ne soit par recouvert par le tapis de sol, etc.
- Le ventilateur fonctionne lorsque la température interne de l'appareil atteint un certain niveau. Ce n'est pas anormal que le ventilateur ne fonctionne pas à la mise sous tension.
- Si l'appareil est installé trop près de l'autoradio ou de l'antenne, des interférences peuvent se produire. Dans ce cas, éloignez l'amplificateur de l'autoradio ou de l'antenne.
- Si l'appareil principal n'est pas alimenté, vérifiez les connexions.
- Cet amplificateur est équipé d'un circuit* destiné à protéger les transistors et les haut-parleurs en cas de défaillance. N'essayez pas de tester l'efficacité de ce circuit en recouvrant les dissipateurs thermiques ou en effectuant des connexions inadéquates.
- N'utilisez pas l'appareil sur une batterie faible, car sa performance maximale dépend d'une bonne alimentation en électricité.
- Pour des raisons de sécurité, écoutez l'autoradio à un volume modéré afin d'entendre les bruits extérieurs.

Circuit de protection
Cet amplificateur est équipé d'un circuit de protection qui entre en service dans les cas suivants:
— Surchauffe de l'appareil
— Production d'un courant continu
— Court-circuit aux bornes des haut-parleurs.
La couleur du témoin PROTECTOR passe du vert au rouge et l'appareil s'éteint.
Si le cas se présente, coupez l'alimentation de l'appareil raccordé et éjectez la cassette ou le disque compact avant d'examiner la cause de la défaillance. Si l'amplificateur est trop chaud, attendez qu'il refroidisse.

Pour toute question ou problème qui ne serait pas traité dans ce manuel, consultez votre concessionaire Sony.

Caution

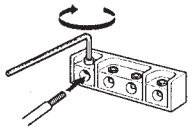
- Before making any connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Be sure to use speakers with an adequate power rating. If you use small capacity speakers, they may be damaged.
- Do not connect the ⊖ terminal of the speaker system to the car chassis, and do not connect the ⊖ terminal of the right speaker with that of the left speaker.
- Install the input and output cords away from the power supply lead as running them close together can generate some interference noise.
- This unit is a high-power amplifier. Therefore, it may not perform to its full potential if used with the speaker cords supplied with the car.
- If your car is equipped with a computer system for navigation or some other purpose, do not remove the ground wire from the car battery. If you disconnect the wire, the computer memory may be erased. To avoid short circuits when making connections, disconnect the +12 V power supply lead until all the other leads have been connected.

Make the terminal connections as illustrated below.

Attention

- Avant d'effectuer les connexions, débranchez le fil de masse de la borne de la batterie pour éviter un court-circuit.
- Utilisez des haut-parleurs d'une capacité adéquate. Si vous utilisez des haut-parleurs de faible capacité, ils risquent d'être endommagés.
- Ne raccordez pas la borne ⊖ des haut-parleurs à la carrosserie de la voiture ni la borne ⊖ du haut-parleur droit à celle du haut-parleur gauche.
- Eloignez les cordons d'entrée et de sortie du fil d'alimentation électrique pour éviter que des interférences ne se produisent.
- Cet appareil est un amplificateur de haute puissance et il peut ne pas atteindre sa puissance maximale si les cordons de haut-parleurs originaux de la voiture lui sont raccordés.
- Si votre voiture est équipée d'un ordinateur de bord pour la navigation ou à toute autre fin, ne débranchez pas le fil de masse de la batterie de la voiture. Si vous débranchez ce fil, toute la mémoire de l'ordinateur sera effacée. Pour éviter un court-circuit lorsque vous effectuez les branchements, branchez le fil d'alimentation de +12 volts uniquement après avoir branché tous les autres fils.

Effectuez les connexions de la manière indiquée ci-dessous.



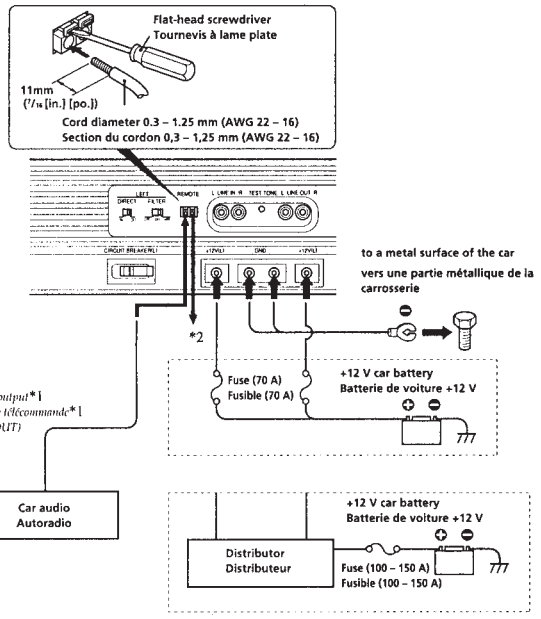
Note
Tighten the screws firmly, but be careful not to apply too much force as doing so may damage the screws.*

** The torque value should be less than 1 N•m.*

Remarque
Ne serrez pas trop fort la vis car vous pourriez l'endommager.*

** Le couple de serrage devrait être inférieur à 1 N•m.*

Power Connection Leads
Câbles d'alimentation



*1 *If you have the factory original or some other car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*

*2 *The output voltage for connecting an optional power amplifier is the same as the supplied voltage to the REMOTE terminal.*

*1 *Si vous disposez du modèle d'origine ou d'un autre autoradio dont l'amplificateur ne comporte pas de sortie de télécommande, raccordez la borne d'entrée de télécommande (REMOTE) à la prise d'alimentation accessoires.*

*2 *La tension de sortie pour le raccordement d'un amplificateur de puissance en option est identique à la tension fournie à la borne REMOTE.*

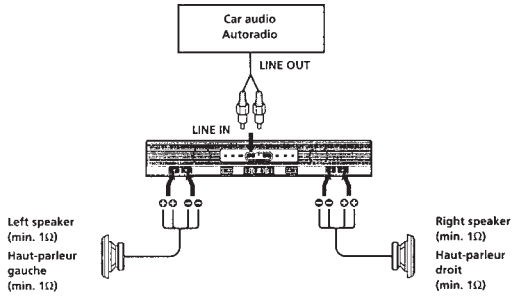
Notes on the power supply

- *Connect the +12 V power supply lead only after all the other leads have been connected.*
- ***Be sure to connect the ground lead of the unit securely to a metal surface of the car. A loose connection may cause the amplifier to malfunction.***
- *Be sure to connect the remote control lead of the car audio to the remote terminal.*
- *When using a car audio without a remote output on the amplifier, connect the remote input terminal (REMOTE) to the accessory power supply.*
- *Use the power supply lead with a fuse attached (70 A).*
- *Place the fuse in the power supply lead as close as possible to the car battery.*
- *Make sure that the leads to be connected to the **+12 V** and **GND** terminals of this unit are larger than 4-Gauge (AWG-4) or have a sectional area of more than 20 mm².*
- *When using the optional RC-46 power amplifier connecting cord, consult that manual for proper use.*

Remarques sur l'alimentation électrique

- *Raccordez le câble d'alimentation +12 V uniquement après avoir réalisé toutes les autres connexions.*
- ***Raccordez correctement le fil de masse à une partie métallique de la voiture. Une connexion lâche peut provoquer un dysfonctionnement de l'amplificateur.***
- *Veillez à raccorder le fil de télécommande de l'autoradio à la borne de télécommande.*
- *Si vous utilisez un autoradio dont l'amplificateur ne comporte pas de sortie de télécommande, raccordez la borne d'entrée de la télécommande (REMOTE) à la prise d'alimentation accessoires.*
- *Utilisez un câble d'alimentation muni d'un fusible (70 A).*
- *Fixez le câble d'alimentation le plus près possible de la batterie de voiture.*
- *Vous devez raccorder des câbles de calibre supérieurs à 4 (AWG-4) ou d'une section supérieure à 20 mm² aux bornes **+12V** et **GND**.*
- *Lorsque vous utilisez le cordon de raccordement pour amplificateur RC-46 en option, consultez le manuel pour une utilisation correcte.*

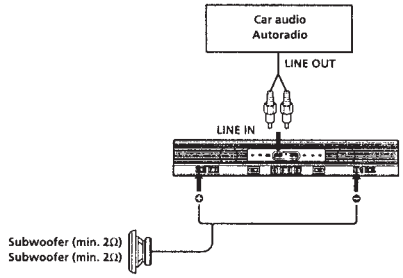
2-Speaker System
Système à 2 haut-parleurs



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

As the Monaural Amplifier for a Subwoofer
Comme amplificateur monaural pour un haut-parleur d'extrêmes graves



For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note

If you wish to use a subwoofer as a monaural speaker, connect the speaker as illustrated above. The output signals to the subwoofer will be the combination of both the right and left output signals.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque

Si vous désirez utiliser un haut-parleur d'extrêmes graves comme haut-parleur monaural, raccordez le haut-parleur comme illustré ci-dessus. Les signaux de sortie vers le haut-parleur d'extrêmes graves seront une combinaison des signaux de sortie droit et gauche.

Dual Mode System (With a Bridged Subwoofer)
Double mode de connexion (avec un haut-parleur d'extrêmes graves en pont)

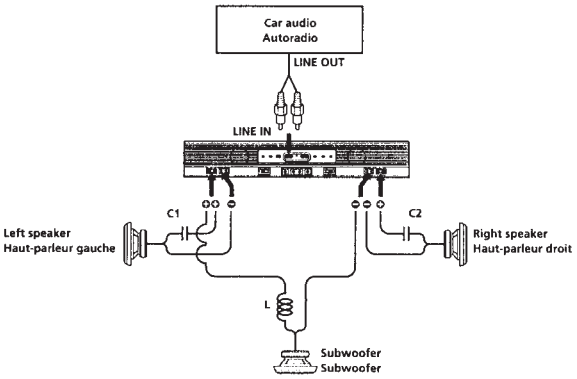


Table of crossover values for 6 dB/octave (4 ohms)

Crossover Frequency unit: Hz	L (coil)* unit: mH	C1/C2 (capacitor)* unit: µF
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
260	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

* (not supplied)

Tableau des valeurs de recoupement pour 6 dB/octave (4 ohms)

Fréquence de recoupement unité: Hz	L (bobine)* unité:mH	C1/C2 (condensateur)* unité:µF
50	12,7	800
80	8,2	500
100	6,2	400
130	4,7	300
150	4,2	270
200	3,3	200
260	2,4	150
400	1,6	100
600	1,0	68
800	0,8	50
1000	0,6	39

* (non fourni)

Notes

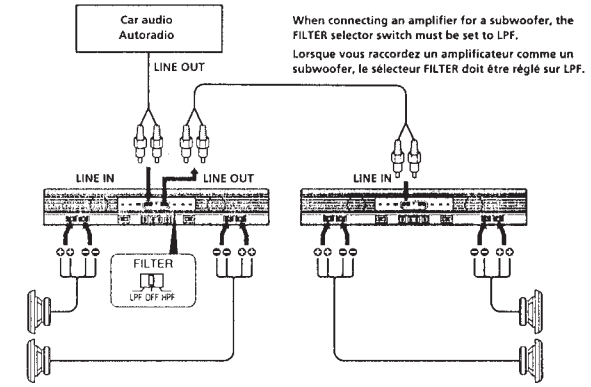
- *When using passive crossover networks in a multi-speaker system, make sure that the speaker system's impedance is not lower than those suitable for this unit.*
- *When installing a 12 decibel/octave system, where both a choke and capacitor are used in series to form a circuit, please make sure to connect the speakers. When neither the ⊕ or ⊖ terminals of the speakers are connected, the impedance in the resonance area will decrease dramatically resulting in a short-circuit-like situation causing the amplifier to become abnormally hot or to malfunction.*

Remarques

- *Si vous utilisez des circuits de recoupement de fréquence passifs dans un système à plusieurs haut-parleurs, assurez-vous que l'impédance du système n'est pas inférieure à celle prévue pour l'appareil.*
- *Lorsque vous installez un système à 12 décibels/octaves où la bobine d'arrêt et le condensateur sont utilisés en série pour former un circuit, raccordez les haut-parleurs. Si vous ne raccordez ni la borne ⊕ ou ⊖ des haut-parleurs, l'impédance dans la zone de résonance sera considérablement réduite, ce qui entraînera une situation comparable à un court-circuit et, partant, un échauffement anormal ou un dysfonctionnement de l'amplificateur.*

2-way System
Système 2 voies

Two output channels
Deux canaux de sortie



When connecting an amplifier for a subwoofer, the FILTER selector switch must be set to LPF.

Lorsque vous raccordez un amplificateur comme un subwoofer, le sélecteur FILTER doit être réglé sur LPF.

Full range speakers (min. 1Ω)
Haut-parleurs à large bande (min. 1Ω)

Subwoofers (min. 1Ω)
Subwoofers (min. 1Ω)

Use the LINE OUT terminal when you install more amplifiers.

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note

A maximum of 3 amplifiers can be connected to the LINE OUT terminal. If you connect more than 3 amplifiers, it may cause problems such as sound dropout.

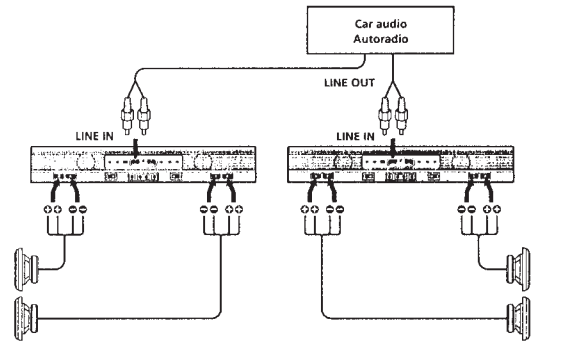
Utilisez la borne LINE OUT lorsque vous installez plusieurs amplificateurs.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque

Vous pouvez raccorder un maximum de 3 amplificateurs à la borne LINE OUT. Si vous raccordez plus de trois amplificateurs, cela peut provoquer des problèmes comme des baisses du son.

Four output channels
Quatre canaux de sortie



Full range speakers (min. 1Ω)
Haut-parleurs à large bande (min. 1Ω)

Subwoofers (min. 1Ω)
Subwoofers (min. 1Ω)

For details on the settings of switches and controls, refer to "Location and Function of Controls."

Note

In this system, the volume of the subwoofers will be controlled by the car audio fader control.

Pour plus de détails sur les réglages des commutateurs et commandes, reportez-vous à "Emplacement et fonction des commandes".

Remarque

Dans ce système, le volume des haut-parleurs d'extrêmes graves est contrôlé par la commande de balance avant/arrière de l'autoradio.

Make the terminal connections as illustrated below.

Pass the leads through the silicone cap and connect the leads. Check the connections and tighten the screws if necessary.
Cover the terminals with the cap.

Note

Depending on the wire, the leads may become loose after connecting. Recheck and tighten the terminal screws periodically. A loose or disconnected lead may cause short-circuit or fire.

Effectuez les connexions de la manière indiquée ci-dessous.

Faites passer les fils dans le capuchon en silicone et raccordez les fils. Vérifiez les connexions et serrez les vis si nécessaire.
Recouvrez les bornes avec le capuchon.

Remarque

Suivant le câble, il se peut que la connexion des fils devienne lâche après le branchement. Revérifiez et serrez les vis de borne régulièrement. Un fil lâche ou déconnecté peut provoquer un court-circuit ou un incendie.

Nehmen Sie die Anschlüsse wie unten abgebildet vor.

Führen Sie die Leitungen durch die Silikonabdeckung, und schließen Sie sie an. Prüfen Sie, ob die Verbindungen fest sind, und ziehen Sie bei Bedarf die Schrauben an. Schieben Sie die Silikonabdeckung über die Anschlüsse.

Hinweis

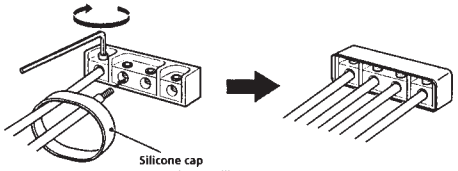
Je nach verwendetem Kabel können sich die Leitungen nach dem Anschließen lösen. Prüfen Sie die Anschlußschrauben regelmäßig, und ziehen Sie sie gegebenenfalls nach. Wenn sich eine Leitung ganz oder teilweise vom Anschluß gelöst hat, besteht Kurzschluß- und Feuergefahr.

Eseguire i collegamenti del terminale come illustrato sotto.

Far passare i cavi attraverso la fascetta di silicone e collegarli. Se necessario, controllare i collegamenti e stringere le viti.
Coprire i terminali con il cappuccio.

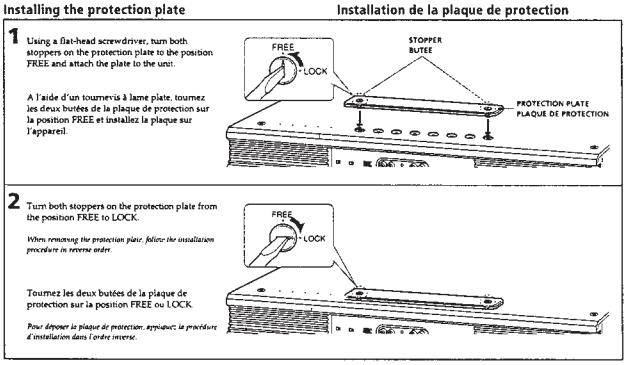
Nota

A seconda del cavo utilizzato, i collegamenti dei cavi potrebbero allentarsi. Controllare e stringere le viti dei terminali periodicamente. Un cavo allentato o scollegato può provocare corti circuiti o incendi.



Silicone cap
Protection en silicone
SiliKonabdeckung
Fascetta di silicone

Installing the protection plate **Installation de la plaque de protection**

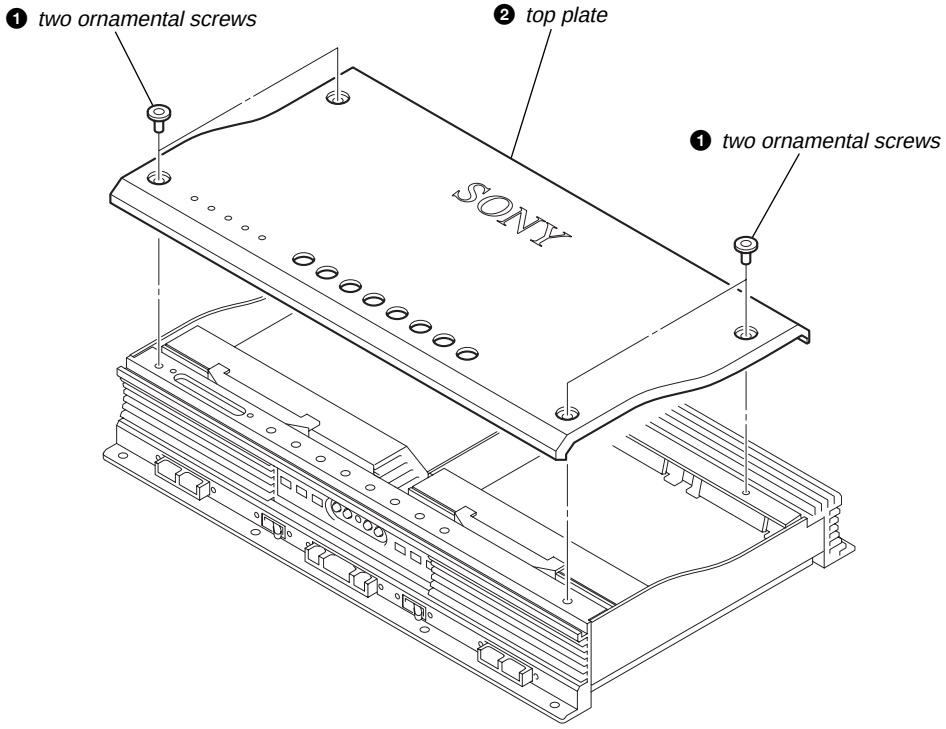

1
Using a flat-head screwdriver, turn both stoppers on the protection plate to the position FREE and attach the plate to the unit.
A l'aide d'un tournevis à lame plate, tournez les deux butées de la plaque de protection sur la position FREE et installez la plaque sur l'appareil.
FREE
LOCK
STOPPER
BUTEE
PROTECTION PLATE
PLAQUE DE PROTECTION
2
Turn both stoppers on the protection plate from the position FREE to LOCK.
When removing the protection plate, follow the installation procedure in reverse order.
Tournez les deux butées de la plaque de protection sur la position FREE ou LOCK.
Pour déposer la plaque de protection, appliquez la procédure d'installation dans l'ordre inverse.
FREE
LOCK

(US, Canadian Model)

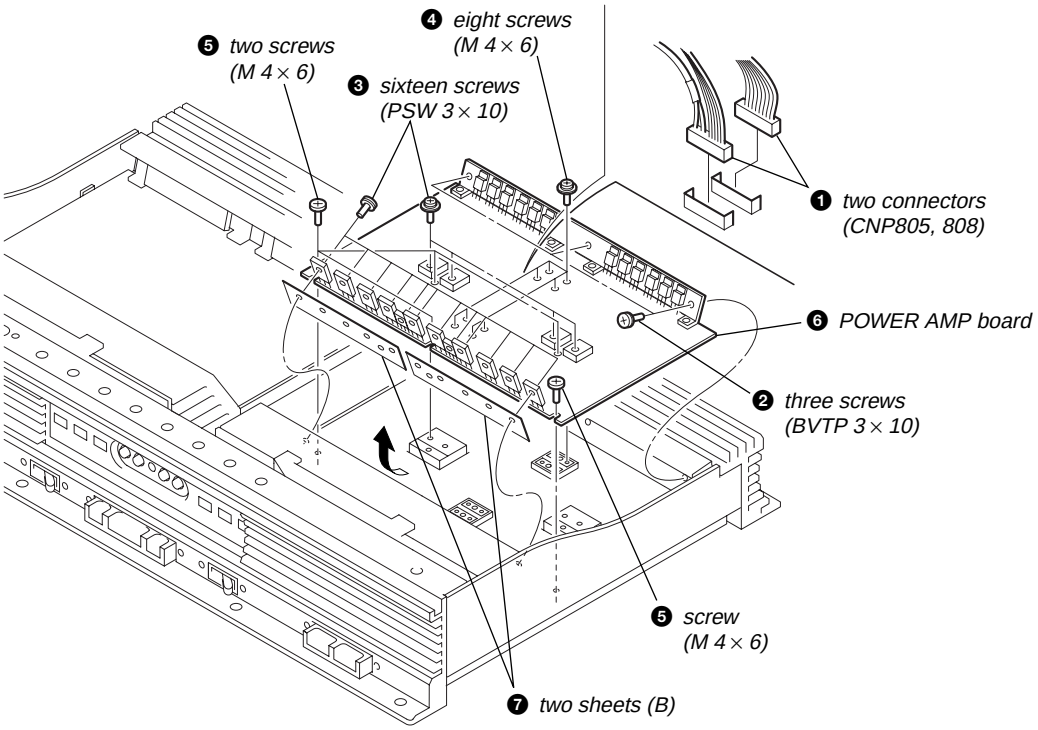
SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

TOP PLATE



POWER AMP BOARD

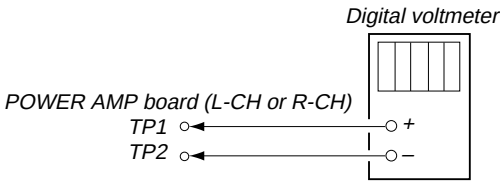


SECTION 4
ELECTRICAL ADJUSTMENTS

IDLING ADJUSTMENT (without signal input)

Note: The idling adjustment should be executed on the L-CH and R-CH of the POWER AMP board respectively.

Connection:



Procedure:

1. Connect the digital voltmeter to TP1 and TP2 on the POWER AMP board.
2. Turn fully the VR901 counterclockwise. (*1)
3. Turn on the power.
4. Turn the VR901 (*2) so that a reading on the digital voltmeter is in a range of 1mV to 3mV in the center of 2mV. (*3)
5. In the same manner, adjust another POWER AMP board.

*1: This prevents over current from flowing. If over current flows, the protector works to disable the amplifier.
*2: The idling current increases when VR901 is turned clockwise, or decreases by counterclockwise turn.
*3: The voltage will fluctuate sensitively, thus requiring careful adjustment.

Adjustment Location: See page 10 .

PROTECTOR CHECK

Note 1: Check it without canceling the protector.
Note 2: The protector check should be executed on the L-CH and R-CH of the POWER AMP board respectively.

1. Offset Protector Check

Procedure:

1. Turn on the power, and short the SPEAKER OUT terminal (CN812 or CN813) and +12V terminal (CN814) on the POWER AMP board.
2. The protector will work, then confirm that the OFFSET LED (D851) color changes lighting green to flashing red and the output is turned off.
3. Open the SPEAKER OUT terminal and +12V terminal.
4. Confirm that the protector is not reset.
5. Turn off the power once, and turn it on again, then confirm that the protector does not work.

Checking Location: See page 10 .

2. Over Current Protector Check

Procedure:

1. Turn on the power, and short TP2 and TP3 on the POWER AMP board.
2. The protector will work, then confirm that the OVER CURRENT LED (D852) color changes lighting green to flashing red and the output is turned off.
3. Open the TP2 and TP3.
4. Confirm that the protector is not reset.
5. Turn off the power once, and turn it on again, then confirm that the protector does not work.

Checking Location: See page 10 .

3. Thermal Protector Check

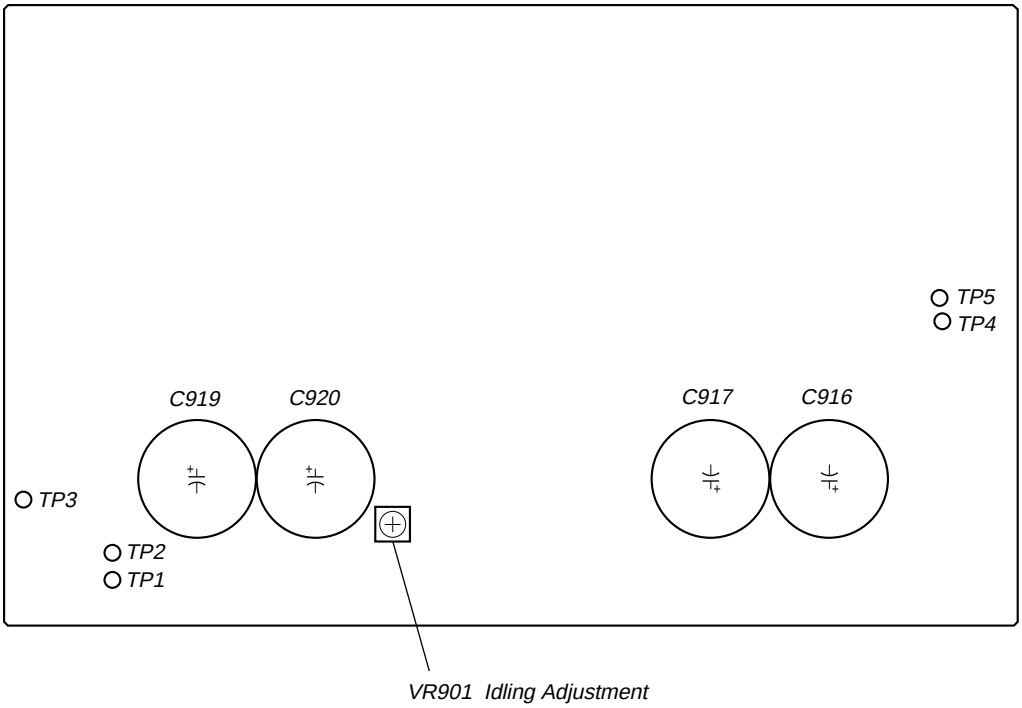
Procedure:

1. Turn on the power, and short TP4 and TP5 on the POWER AMP board.
2. The protector will work, then confirm that the THERMAL LED (D855) color changes lighting green to flashing red, the fun motor (M810 or M811) rotates, and the output is turned off.
3. Open the TP4 and TP5.
4. Confirm that the protector is reset.

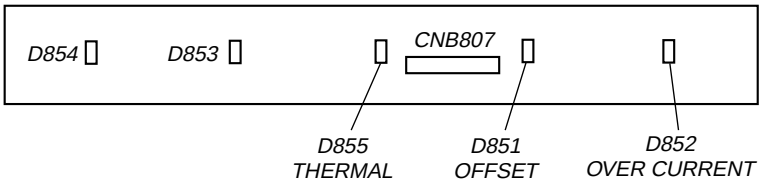
Checking Location: See page 10 .

Adjustment Location and Checking Location :

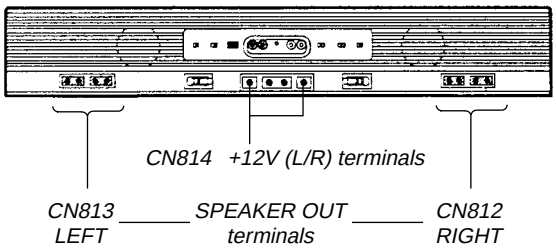
– POWER AMP Board (L-CH or R-CH) (Component Side) –



– LED Board (Conductor Side) –

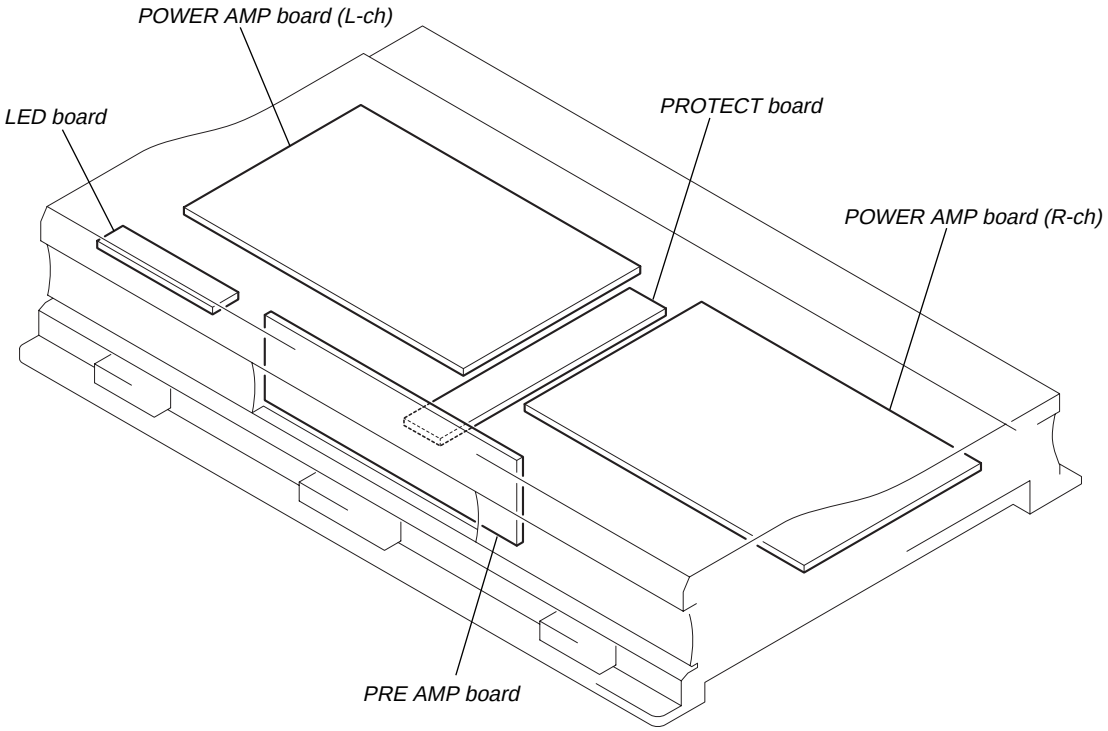


– FRONT VIEW –



SECTION 5
DIAGRAMS

- **Circuit Boards Location**



5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

• Circuit Boards Location

Note on Printed Wiring Board:

- X : parts extracted from the component side.
- Y : parts extracted from the conductor side.
- b : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

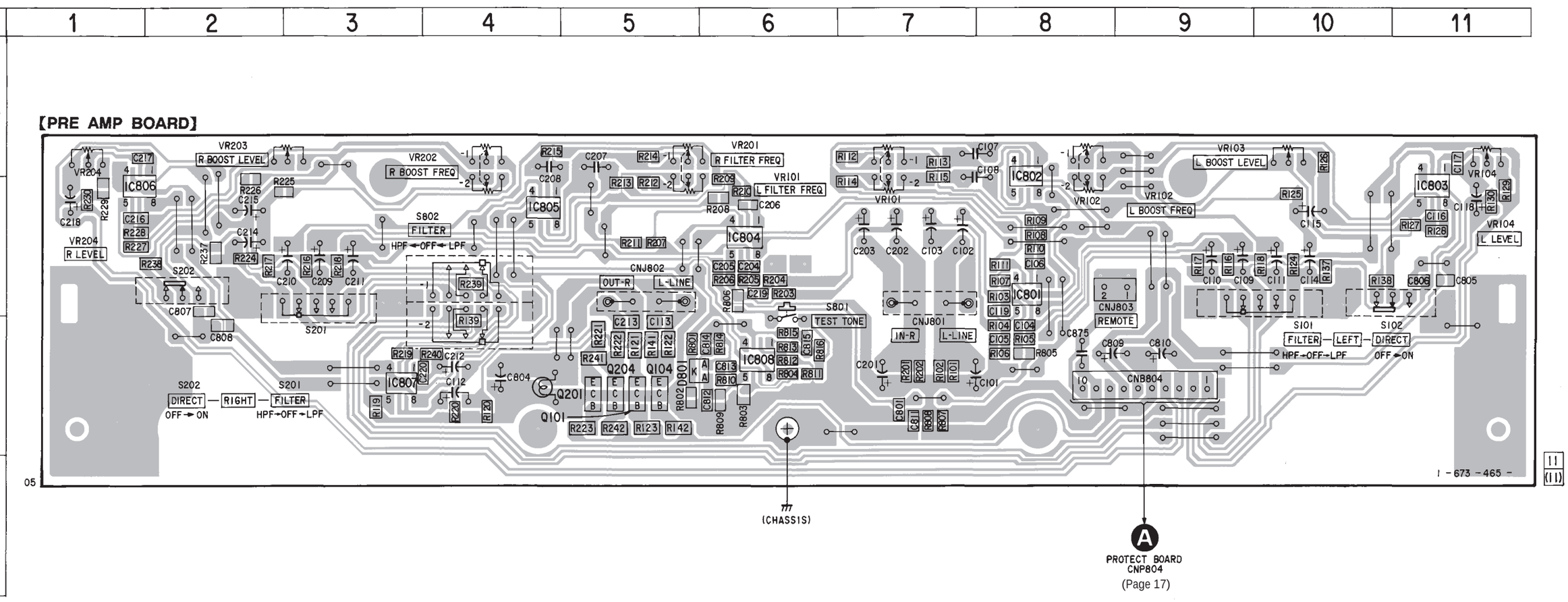
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- 2 : nonflammable resistor.
- C : panel designation.
- U : B+ Line.
- V : B– Line.
- H : adjustment for repair.
- Power voltage is dc 14.4V and fed with regulated dc power supply from +12V terminal (CN814) and REMOTE terminal (CNJ803).
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  F : AUDIO

5-2. PRINTED WIRING BOARD – PRE AMP Section – • See page 11 for Circuit Boards Location.

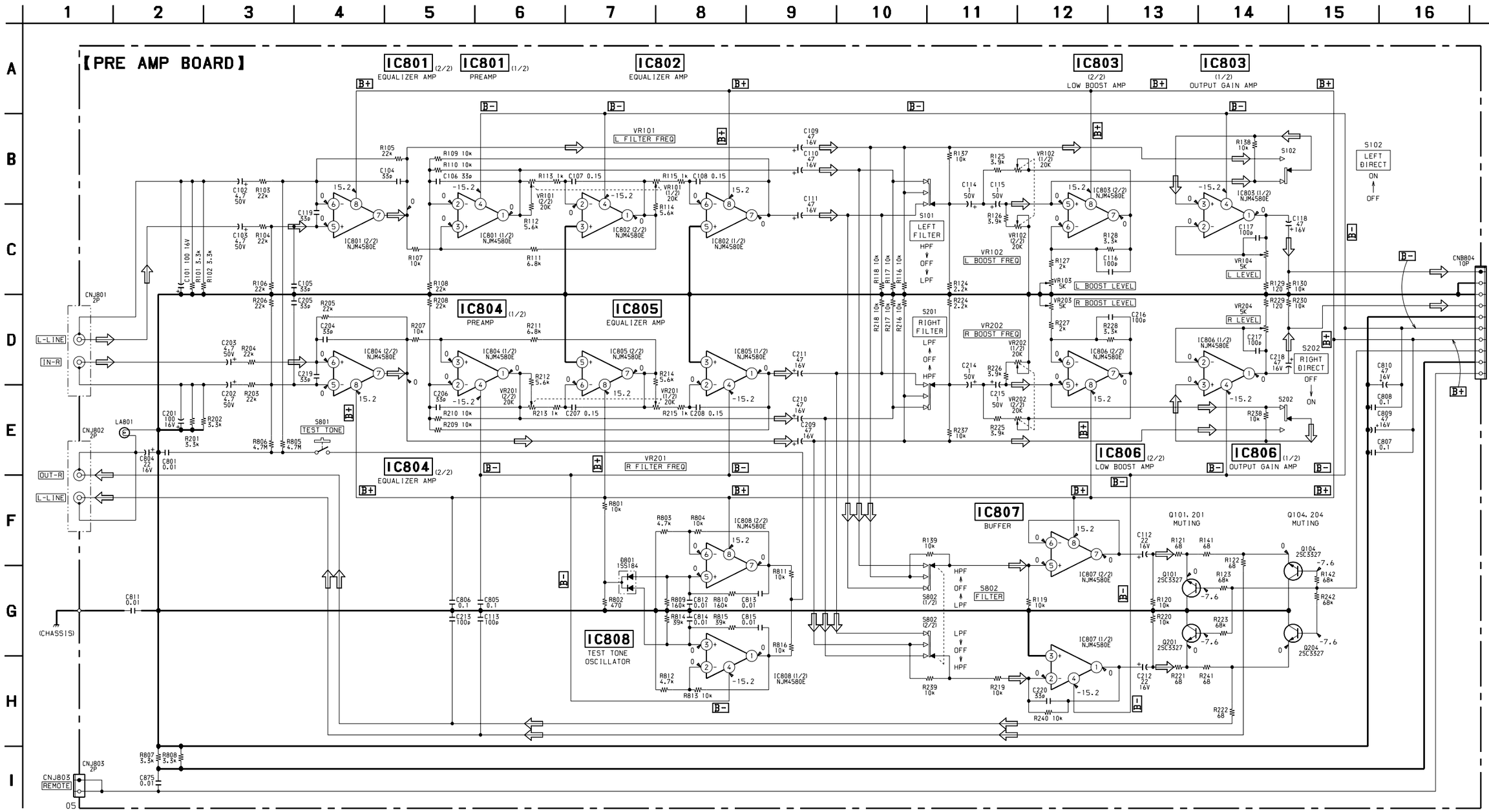
【PRE AMP BOARD】



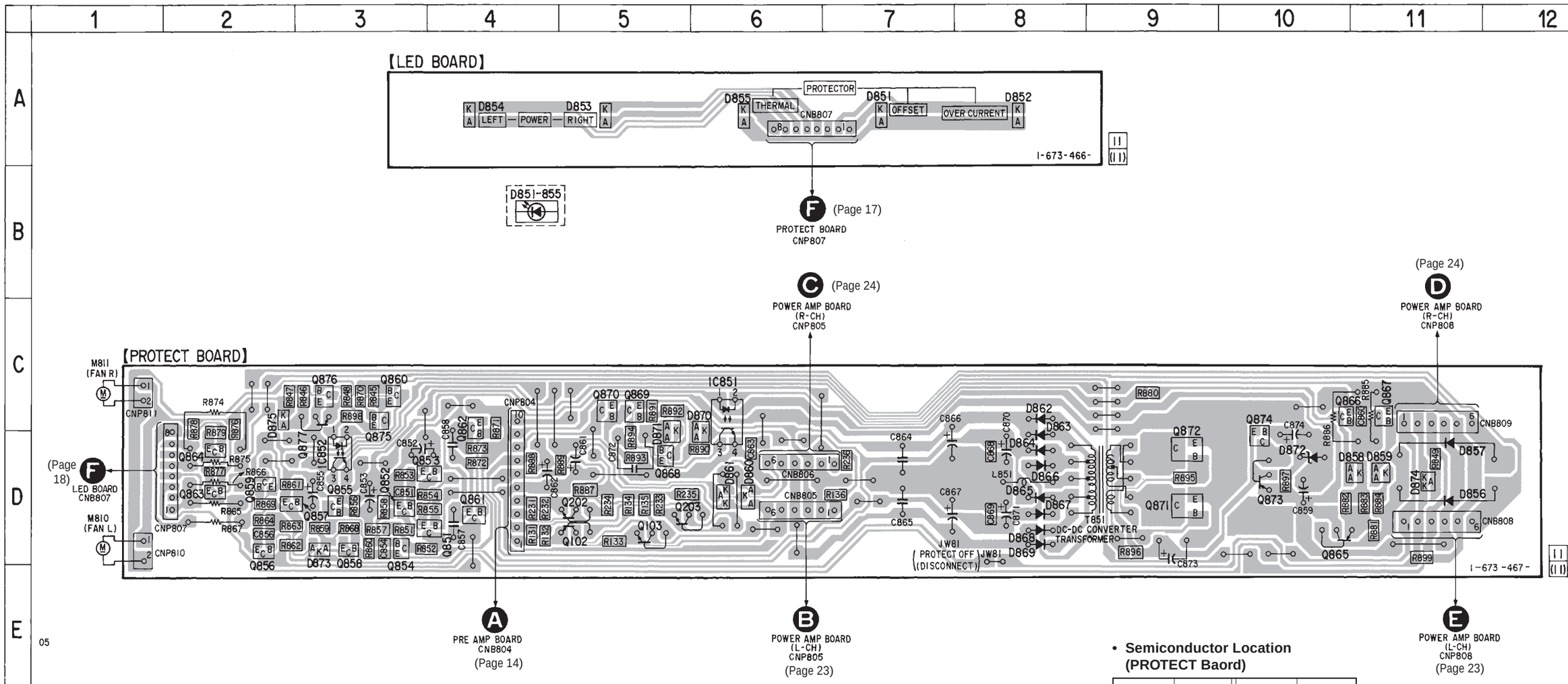
- **Semiconductor Location**

Ref. No.	Location
D801	C-5
IC801	B-8
IC802	B-8
IC803	B-11
IC804	B-6
IC805	B-4
IC806	B-1
IC807	C-3
IC808	C-6
Q101	C-5
Q104	C-5
Q201	C-5
Q204	C-5

5-3. SCHEMATIC DIAGRAM – PRE AMP Section –



5-4. PRINTED WIRING BOARDS – PROTECT Section – • See page 11 for Circuit Boards Location.



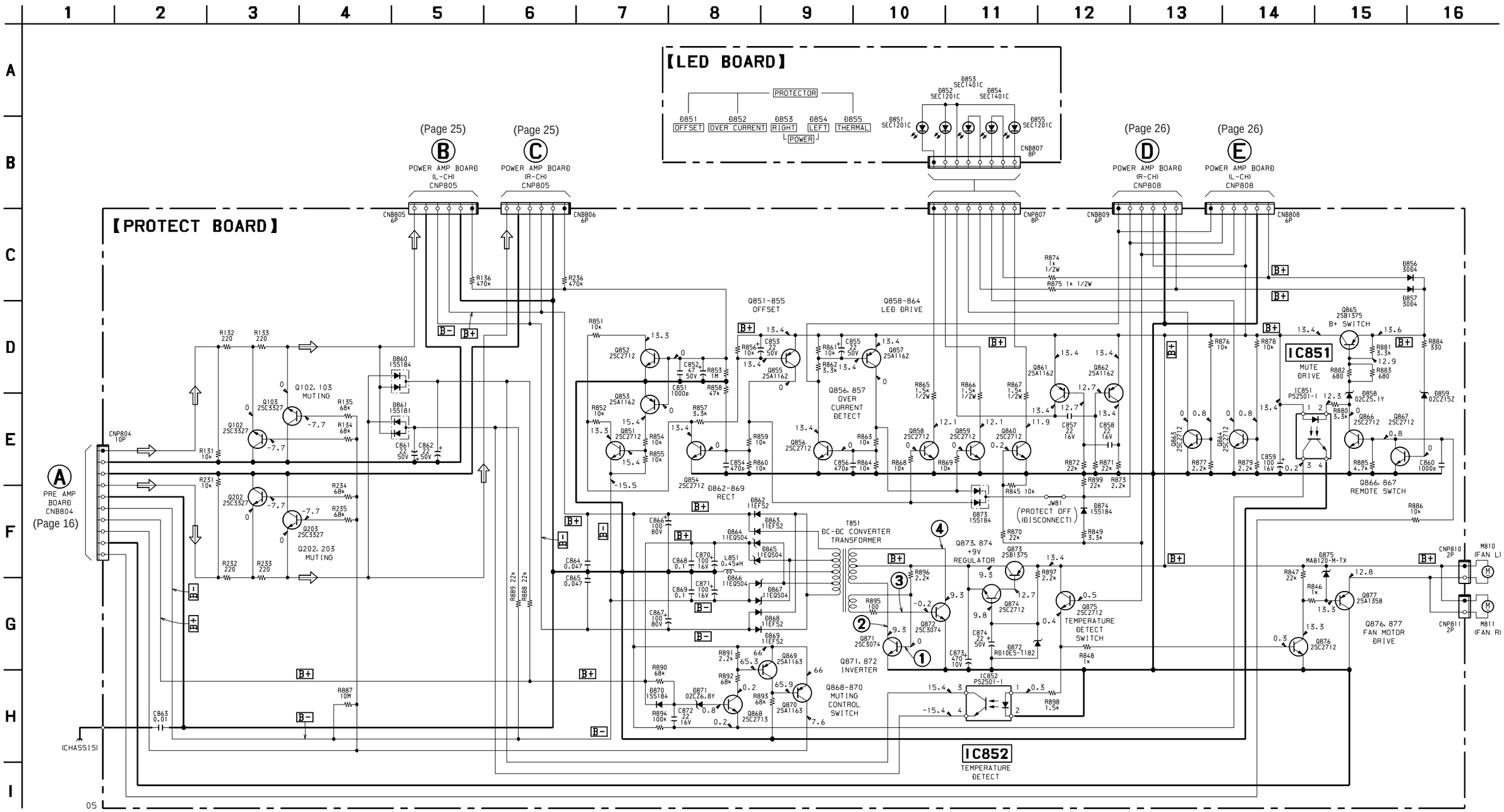
- **Semiconductor Location (LED Board)**

Ref. No.	Location
D851	A-7
D852	A-8
D853	A-5
D854	A-4
D855	A-6

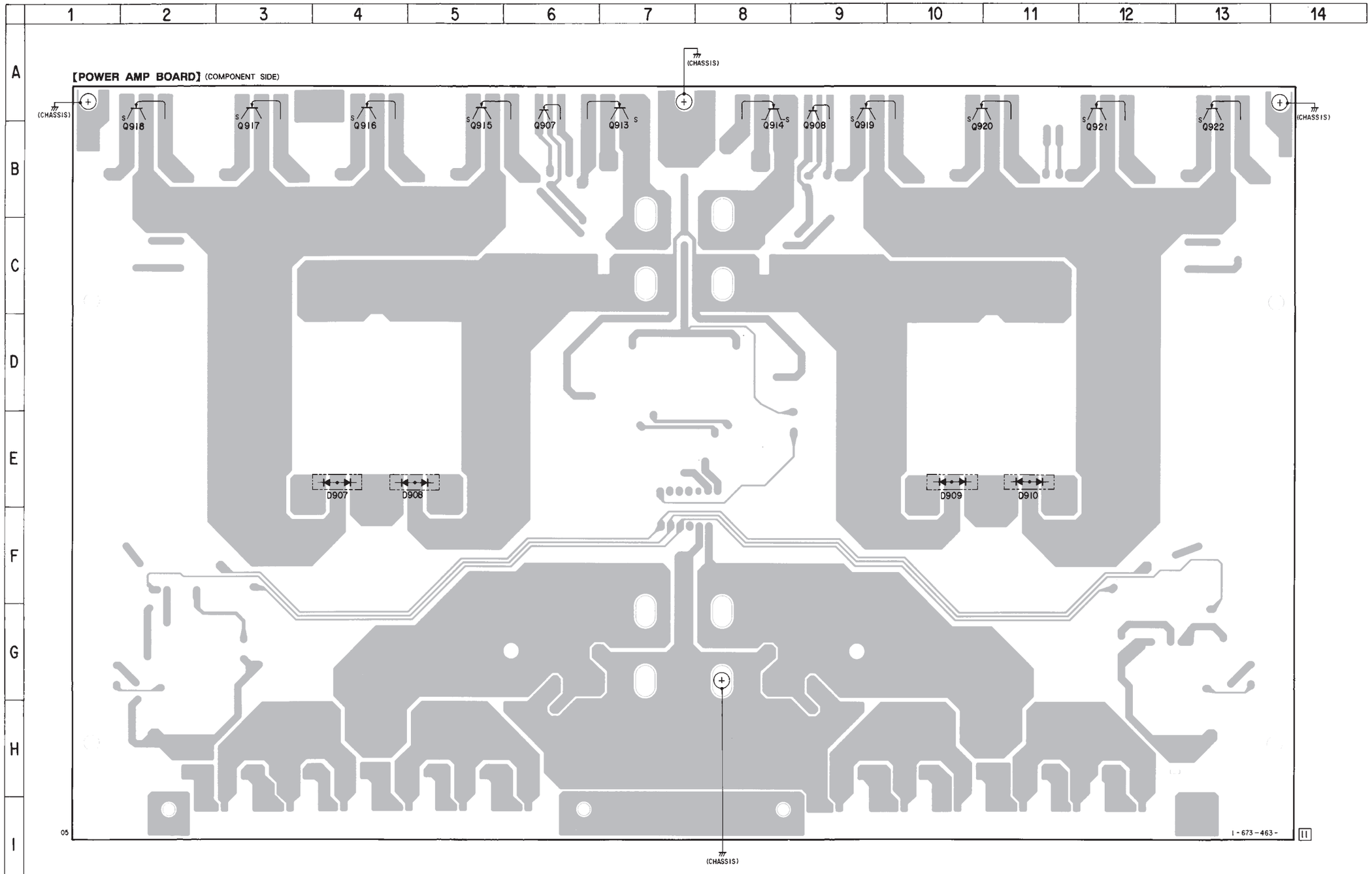
- **Semiconductor Location (PROTECT Baord)**

Ref. No.	Location	Ref. No.	Location
D856	D-11	Q851	D-4
D857	D-11	Q852	D-3
D858	D-11	Q853	D-4
D859	D-11	Q854	D-3
D860	D-6	Q855	D-3
D861	D-6	Q856	D-2
D862	C-8	Q857	D-2
D863	D-8	Q858	D-3
D864	D-8	Q859	D-2
D865	D-8	Q860	C-3
D866	D-8	Q861	D-4
D867	D-8	Q862	C-4
D868	D-8	Q863	D-2
D869	D-8	Q864	D-2
D870	C-6	Q865	D-10
D871	C-5	Q866	C-10
D872	D-10	Q867	C-11
D873	D-3	Q868	D-5
D874	D-11	Q869	C-5
D875	C-2	Q870	C-5
		Q871	D-9
IC851	C-6	Q872	D-9
IC852	D-3	Q873	D-10
		Q874	C-10
Q102	D-5	Q875	C-3
Q103	D-5	Q876	C-3
Q202	D-5	Q877	C-3
Q203	D-5		

5-5. SCHEMATIC DIAGRAM – PROTECT Section – • See page 27 for Waveforms.



5-6. PRINTED WIRING BOARDS – POWER AMP Section (Componemt Side) – • See page 11 for Circuit Boards Location.



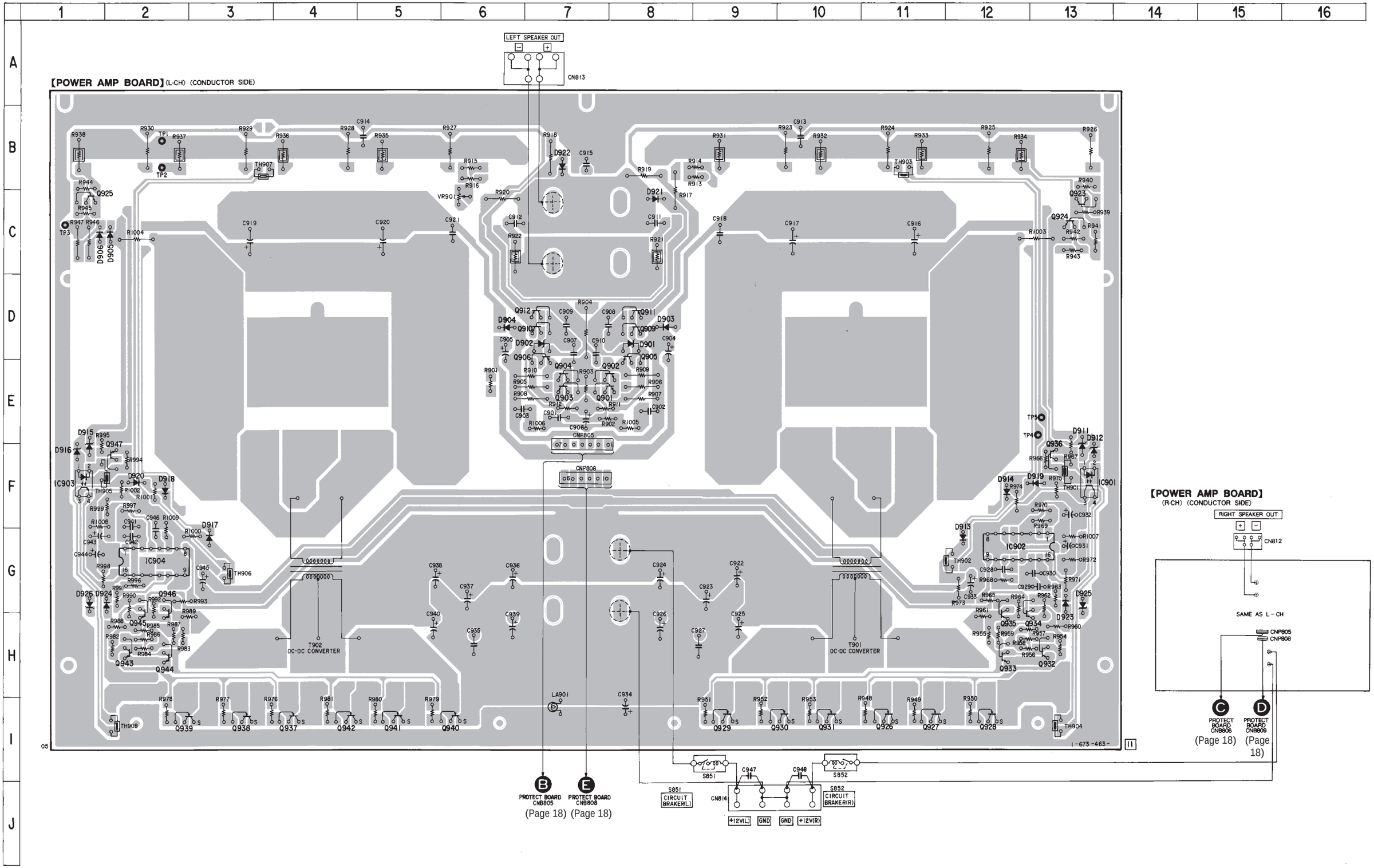
• **Semiconductor Location (Componemt Side)**

Ref. No.	Location	Ref. No.	Location
D907	E-4	Q915	A-5
D908	E-5	Q916	A-4
D909	E-10	Q917	A-3
D910	E-11	Q918	A-2
		Q919	A-9
Q907	A-6	Q920	A-10
Q908	A-9	Q921	A-12
Q913	A-7	Q922	A-13
Q914	A-8		

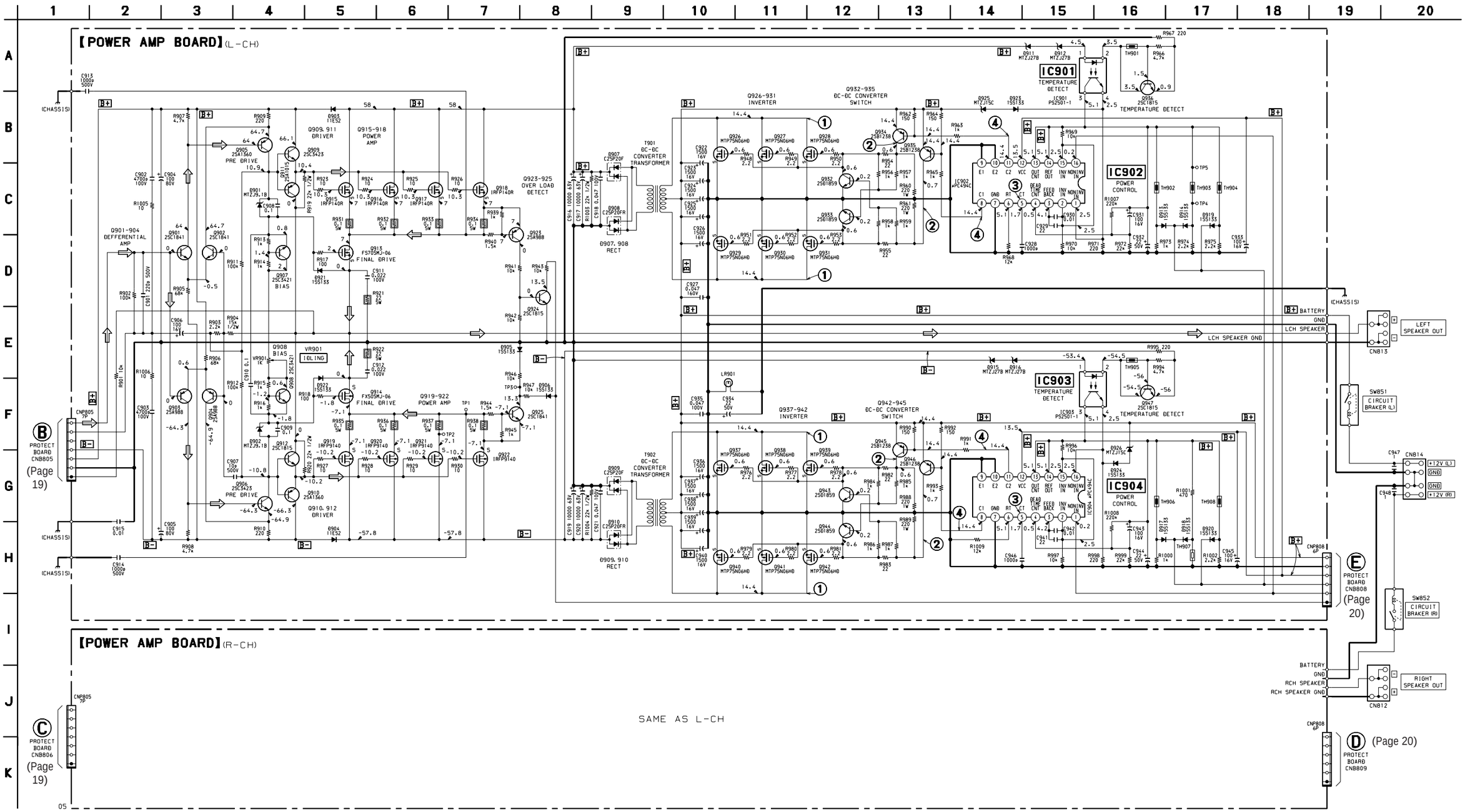
• **Semiconductor Location (Conductor Side)**

Ref. No.	Location
D901	D-8
D902	D-7
D903	D-8
D904	D-6
D905	C-2
D906	C-1
D911	F-13
D912	F-13
D913	G-12
D914	F-12
D915	F-1
D916	F-1
D917	G-3
D918	F-2
D919	F-13
D920	F-2
D921	C-8
D922	B-7
D923	G-13
D924	G-2
D925	G-13
D926	G-1
IC901	F-13
IC902	G-12
IC903	F-1
IC904	G-2
Q901	E-7
Q902	E-7
Q903	E-7
Q904	E-7
Q905	E-8
Q906	E-7
Q909	D-8
Q910	D-7
Q911	D-8
Q912	D-7
Q923	C-13
Q924	C-13
Q925	C-1
Q926	I-11
Q927	I-11
Q928	I-12
Q929	I-9
Q930	I-10
Q931	I-10
Q932	H-13
Q933	H-12
Q934	H-13
Q935	H-12
Q936	F-13
Q937	I-4
Q938	I-3
Q939	I-2
Q940	I-6
Q941	I-5
Q942	I-4
Q943	H-2
Q944	H-2
Q945	G-2
Q946	G-2
Q947	F-2

5-7. PRINTED WIRING BOARDS – POWER AMP Section (Conductor Side) – • See page 11 for Circuit Boards Location.

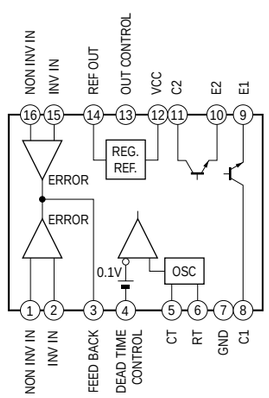


5-8. SCHEMATIC DIAGRAM – POWER AMP Section – • See page 27 for Waveforms.



• **IC Block Diagram**

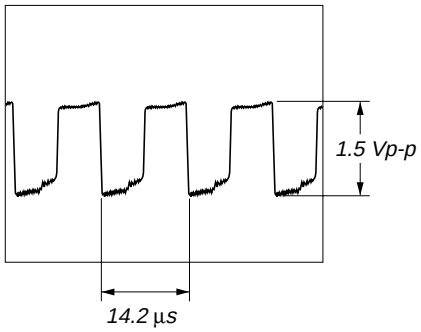
IC902, 904 μPC494C



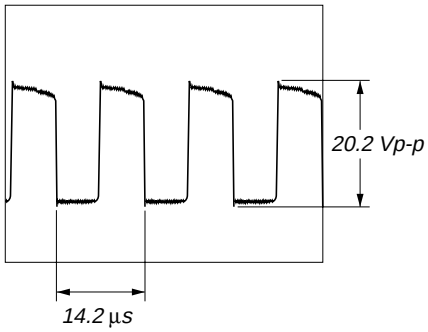
• **Waveforms**

– PROTECT Board –

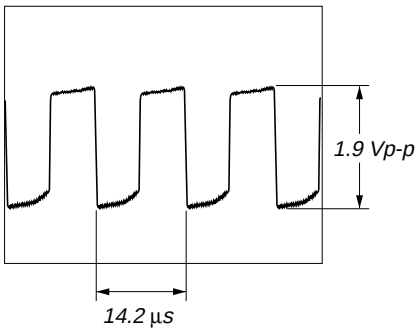
❶ Q871 (BASE)



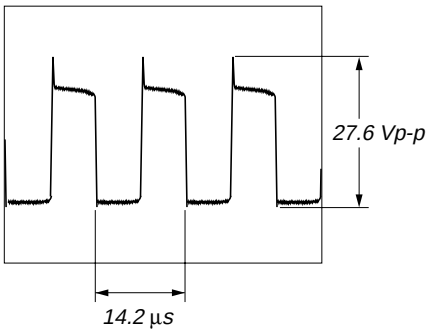
❷ Q871 (COLLECTOR)



❸ Q872 (BASE)

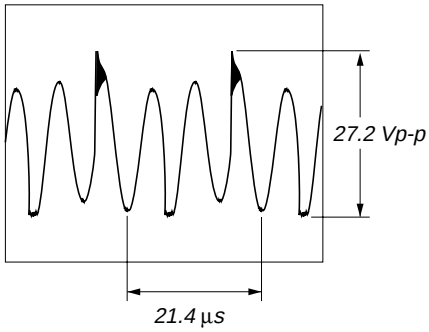


❹ Q872 (COLLECTOR)

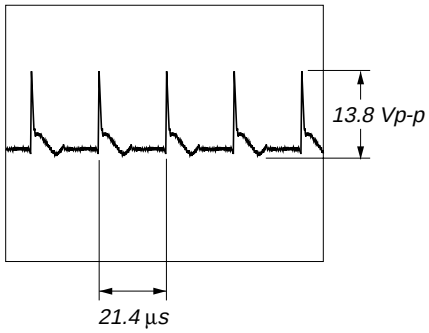


– POWER AMP Board –

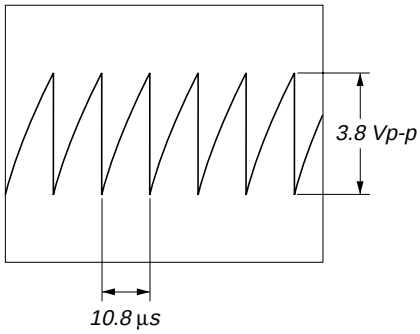
❶ Q926 - 931, 937 - 942 (DRAIN)



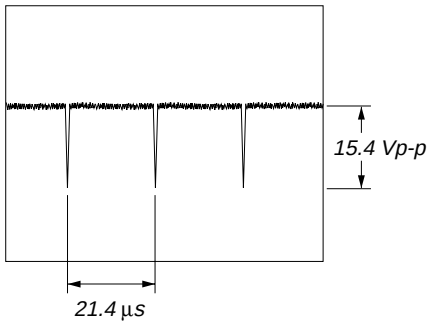
❷ Q934, 935, 945, 946 (COLLECTOR)



❸ IC902, 904 ⑤ (CT)



❹ IC902, IC904 ⑧ (C1), ⑪ (C2)

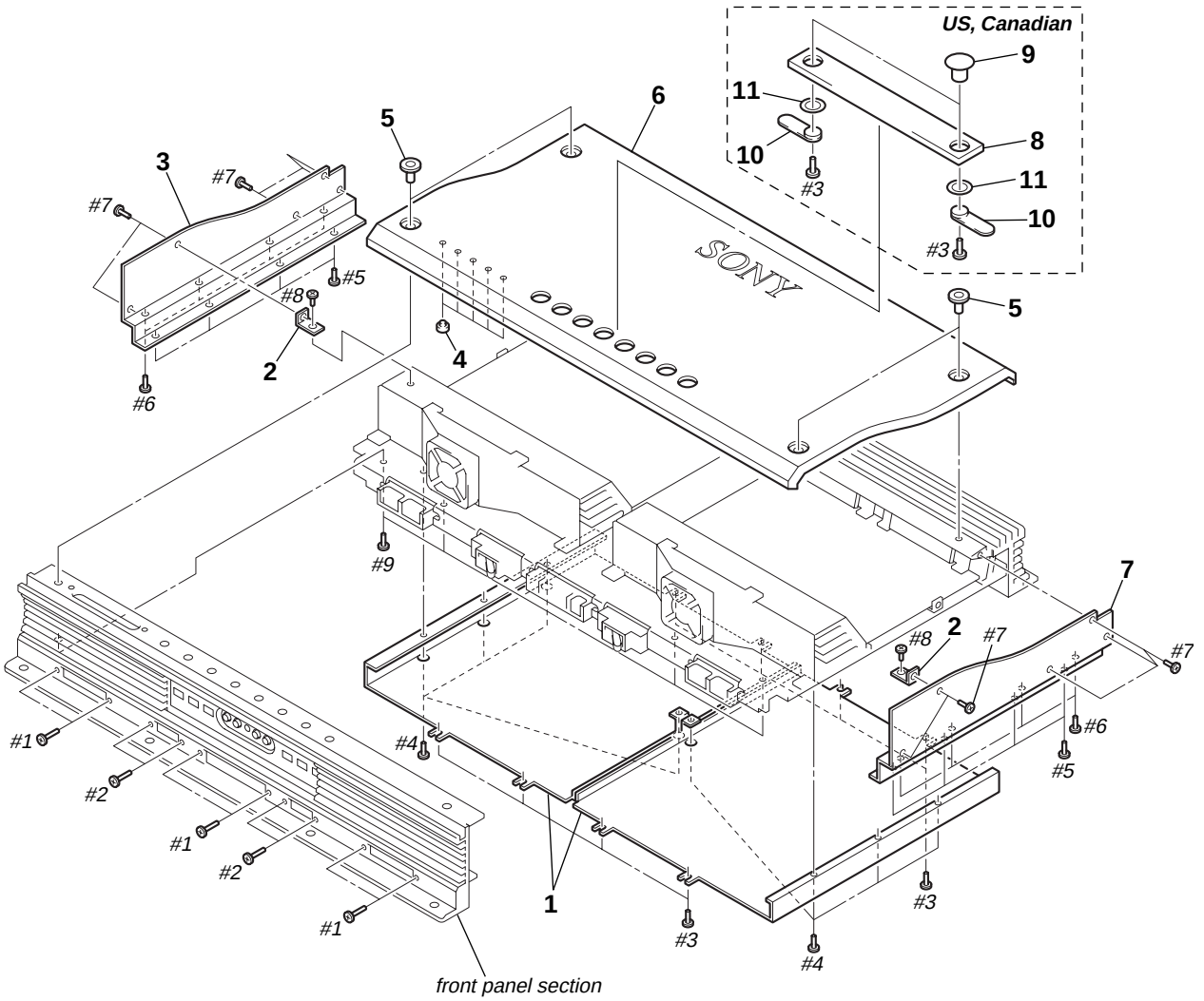


SECTION 6
EXPLODED VIEWS

NOTE:

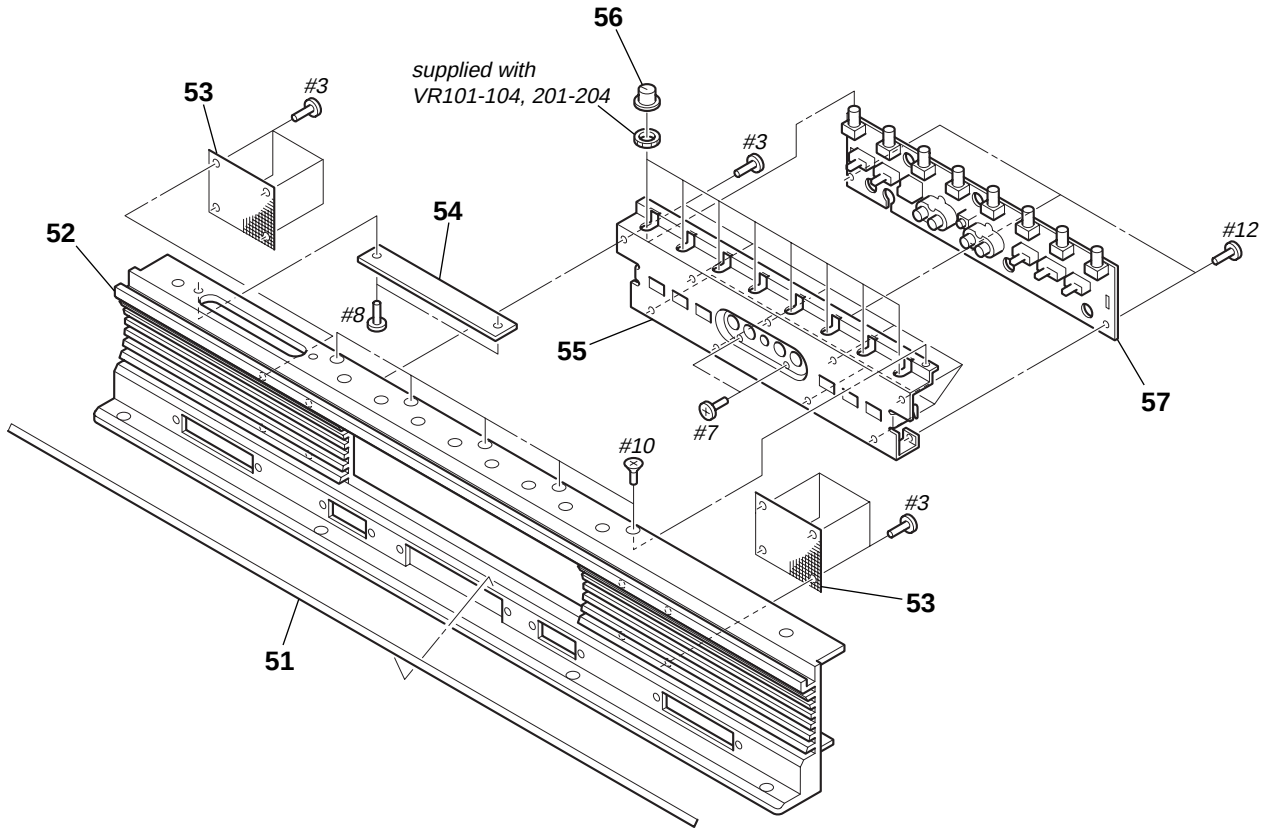
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

(1) TOP PLATE SECTION



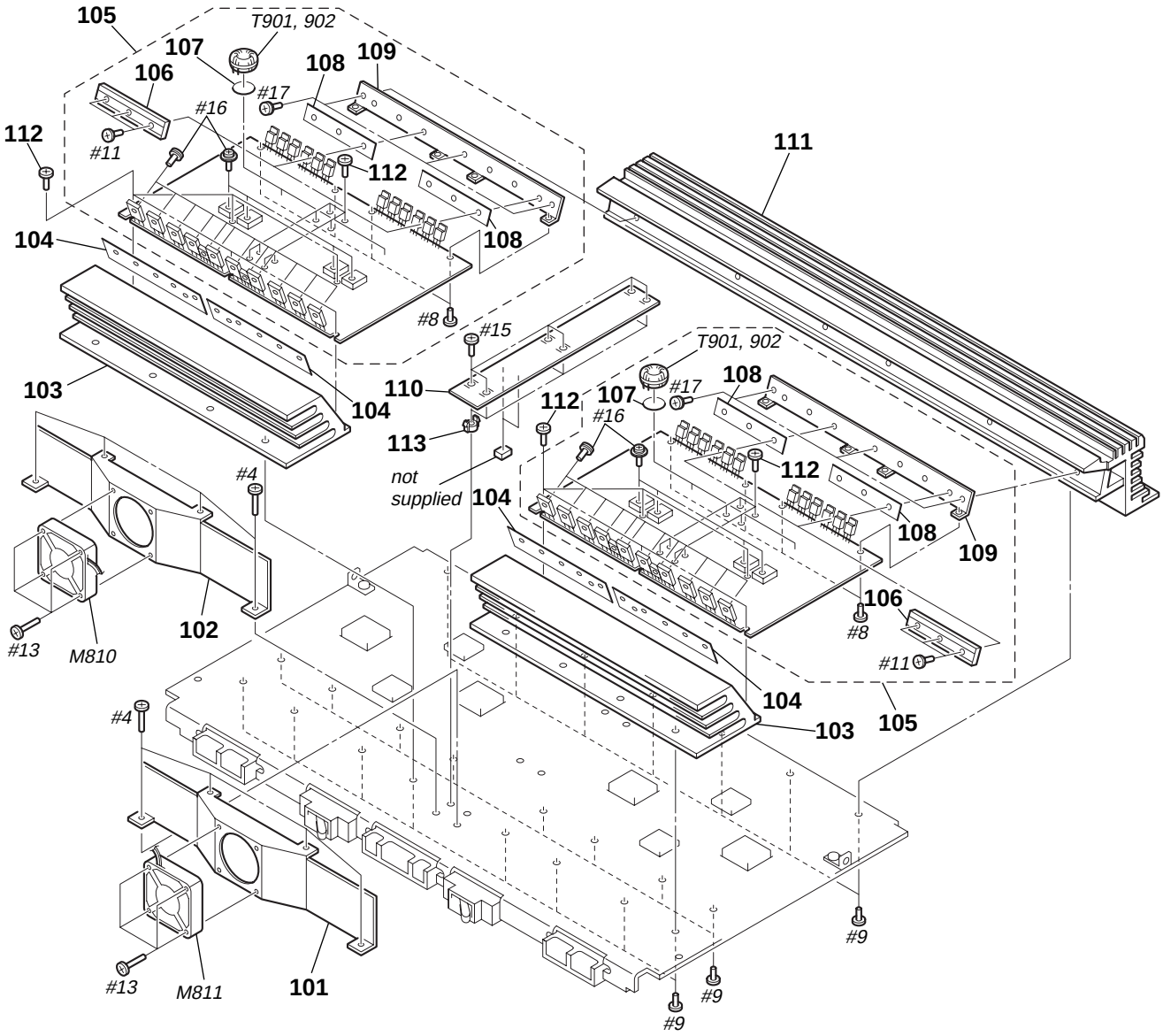
Ref. No.	Part No.	Description	Remark
* 1	3-033-310-01	PLATE, BOTTOM	
* 2	3-033-320-01	BRACKET (PANEL)	
* 3	3-033-308-01	PANEL (SIDE L)	
* 4	3-033-315-01	LENS	
5	3-035-955-01	SCREW, ORNAMENTAL	
* 6	3-033-330-01	PLATE, TOP (US, Canadian)	
* 6	3-033-330-11	PLATE, TOP (AEP, UK, German)	
* 7	3-033-309-01	PANEL (SIDE R)	
* 8	3-035-782-01	COVER (US, Canadian)	
* 9	3-035-783-01	KNOB (COVER) (US, Canadian)	
* 10	3-035-784-01	LEVER (COVER) (US, Canadian)	
* 11	3-035-785-01	CASE (COVER) (US, Canadian)	

(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
* 51	3-033-312-01	PLATE, ORNAMENTAL	
* 52	3-033-325-01	HEAT SINK (FRONT)	
* 53	3-033-311-01	PANEL (FAN)	
* 54	1-673-466-11	LED BOARD	
* 55	3-033-319-01	BRACKET (VR PWB)	
* 56	3-033-313-01	KNOB	
* 57	A-3317-634-A	PRE AMP BOARD, COMPLETE	

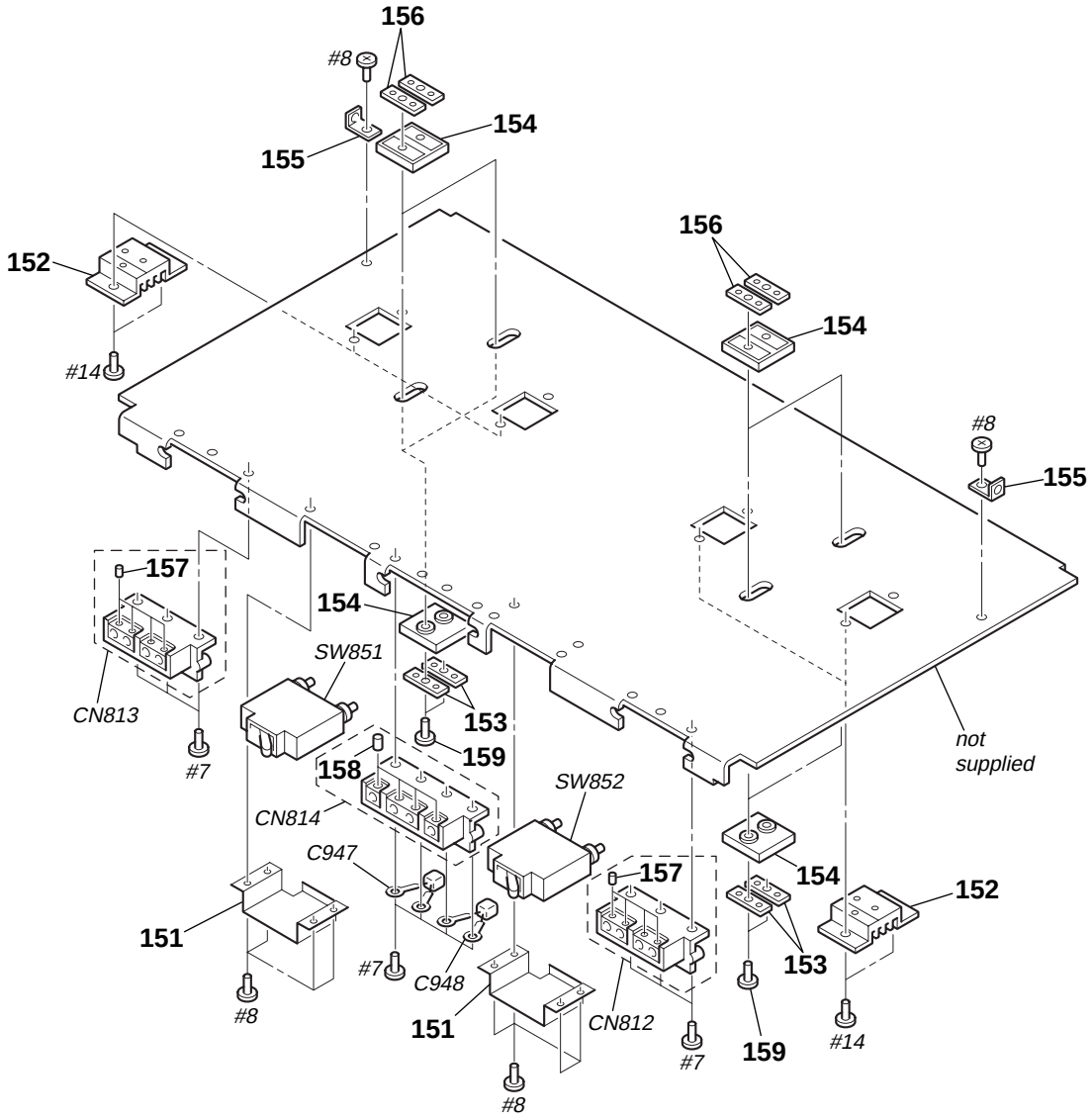
(3) MAIN SECTION



Ref. No.	Part No.	Description	Remark
* 101	3-033-317-01	BRACKET (FAN R)	
* 102	3-033-316-01	BRACKET (FAN L)	
* 103	3-033-326-01	HEAT SINK (CENTER)	
104	3-033-332-01	SHEET (A)	
* 105	A-3317-632-A	POWER AMP BOARD, COMPLETE	
* 106	3-033-321-01	RETAINER	
* 107	3-033-331-01	SHEET, INSULATING	
108	3-033-333-01	SHEET (B)	
* 109	3-033-329-01	HEAT SINK (SUB)	

Ref. No.	Part No.	Description	Remark
* 110	1-673-467-11	PROTECT BOARD	
* 111	3-033-327-01	HEAT SINK (REAR)	
112	3-035-956-01	SCREW, M4X6	
* 113	3-395-832-01	SPACER	
M810	1-698-380-11	MOTOR, FAN (DC)	
M811	1-698-380-11	MOTOR, FAN (DC)	
T901	1-433-860-11	TRANSFORMER, DC-DC CONVERTER	
T902	1-433-860-11	TRANSFORMER, DC-DC CONVERTER	

(4) TERMINAL BOARD SECTION



Ref. No.	Part No.	Description	Remark
* 151	3-033-318-01	BRACKET (BREAKER)	
* 152	3-033-328-01	HEAT SINK (TR)	
* 153	3-033-322-01	BUS BAR (WIRE)	
* 154	3-033-314-01	CASE (BUS BAR)	
* 155	3-033-320-01	BRACKET (PANEL)	
* 156	3-033-323-01	BUS BAR (PWB)	
157	3-035-779-01	SCREW (SP)	
158	3-035-778-01	SCREW (POWER)	
159	3-035-956-01	SCREW, M4X6	
C947	1-136-177-00	CAP, METALIZED FILM 1uF 5% 50V	
C948	1-136-177-00	CAP, METALIZED FILM 1uF 5% 50V	
CN812	1-694-490-11	TERMINAL BOARD (SP)	
CN813	1-694-490-11	TERMINAL BOARD (SP)	
CN814	1-694-489-11	TERMINAL BOARD (BATT)	
SW851	1-576-323-11	BREAKER, CIRCUIT	
SW852	1-576-323-11	BREAKER, CIRCUIT	

LED **POWER AMP**

SECTION 7
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	1-673-466-11	LED BOARD			
		**********			
		< LED >			
D851	8-719-045-55	LED SEC1201C (PROTECTOR, OFFSET)			
D852	8-719-045-55	LED SEC1201C (PROTECTOR, OVER CURRENT)			
D853	8-719-045-60	LED SEC1401C (POWER, RIGHT)			
D854	8-719-045-60	LED SEC1401C (POWER, LEFT)			
D855	8-719-045-55	LED SEC1201C (PROTECTOR, THERMAL)			
**********					
*	A-3317-632-A	POWER AMP BOARD, COMPLETE			
		**********			
*	3-033-321-01	RETAINER			
*	3-033-329-01	HEAT SINK (SUB)			
*	3-033-331-01	SHEET, INSULATING			
	3-033-333-01	SHEET (B)			
		< CAPACITOR >			
C901	1-102-244-00	CERAMIC	220PF	10%	500V
C902	1-106-359-00	MYLAR	4700PF	5%	200V
C903	1-106-359-00	MYLAR	4700PF	5%	200V
C904	1-128-230-11	ELECT	100uF	20%	80V
C905	1-128-230-11	ELECT	100uF	20%	80V
C906	1-126-009-11	ELECT	100uF	20%	16V
C907	1-101-804-00	CERAMIC	10PF	5%	500V
C908	1-136-165-00	FILM	0.1uF	5%	50V
C909	1-136-165-00	FILM	0.1uF	5%	50V
C910	1-136-165-00	FILM	0.1uF	5%	50V
C911	1-106-375-12	MYLAR	0.022uF	5%	200V
C912	1-106-375-12	MYLAR	0.022uF	5%	200V
C913	1-162-318-11	CERAMIC	0.001uF	10%	500V
C914	1-162-318-11	CERAMIC	0.001uF	10%	500V
C915	1-136-153-00	FILM	0.01uF	5%	50V
C916	1-119-770-11	ELECT	10000uF	20%	63V
C917	1-119-770-11	ELECT	10000uF	20%	63V
C918	1-137-353-11	MYLAR	0.047uF	5%	100V
C919	1-119-770-11	ELECT	10000uF	20%	63V
C920	1-119-770-11	ELECT	10000uF	20%	63V
C921	1-137-353-11	MYLAR	0.047uF	5%	100V
C922	1-115-790-11	ELECT	1500uF	20%	16V
C923	1-115-790-11	ELECT	1500uF	20%	16V
C924	1-115-790-11	ELECT	1500uF	20%	16V
C925	1-115-790-11	ELECT	1500uF	20%	16V
C926	1-115-790-11	ELECT	1500uF	20%	16V
C927	1-136-961-11	FILM	0.047uF	10%	160V
C928	1-130-471-00	MYLAR	0.001uF	5%	50V
C929	1-124-288-00	ELECT	22uF	20%	10V
C930	1-136-153-00	FILM	0.01uF	5%	50V
C931	1-126-933-11	ELECT	100uF	20%	16V
C932	1-126-965-11	ELECT	22uF	20%	50V
C933	1-126-933-11	ELECT	100uF	20%	16V
C934	1-126-965-11	ELECT	22uF	20%	50V
C935	1-136-961-11	FILM	0.047uF	10%	160V
C936	1-115-790-11	ELECT	1500uF	20%	16V
C937	1-115-790-11	ELECT	1500uF	20%	16V
C938	1-115-790-11	ELECT	1500uF	20%	16V
C939	1-115-790-11	ELECT	1500uF	20%	16V
C940	1-115-790-11	ELECT	1500uF	20%	16V
C941	1-124-288-00	ELECT	22uF	20%	10V
C942	1-136-153-00	FILM	0.01uF	5%	50V
C943	1-126-933-11	ELECT	100uF	20%	16V
C944	1-126-965-11	ELECT	22uF	20%	50V
C945	1-126-933-11	ELECT	100uF	20%	16V
C946	1-130-471-00	MYLAR	0.001uF	5%	50V
		< CONNECTOR >			
* CNP805	1-564-522-11	PLUG, CONNECTOR 7P			
* CNP808	1-564-521-11	PLUG, CONNECTOR 6P			
		< DIODE >			
D901	8-719-929-15	DIODE MTZJ-9.1B			
D902	8-719-929-15	DIODE MTZJ-9.1B			
D903	8-719-200-82	DIODE 11ES2			
D904	8-719-200-82	DIODE 11ES2			
D905	8-719-991-33	DIODE 1SS133T-77			
D906	8-719-991-33	DIODE 1SS133T-77			
D907	8-719-210-25	DIODE C25P20F			
D908	8-719-210-26	DIODE C25P20FR			
D909	8-719-210-25	DIODE C25P20F			
D910	8-719-210-26	DIODE C25P20FR			
D911	8-719-982-15	DIODE MTZJ-27B			
D912	8-719-982-15	DIODE MTZJ-27B			
D913	8-719-991-33	DIODE 1SS133T-77			
D914	8-719-991-33	DIODE 1SS133T-77			
D915	8-719-982-15	DIODE MTZJ-27B			

Ref. No.	Part No.	Description	Remark
D916	8-719-982-15	DIODE MTZJ-27B	
D917	8-719-991-33	DIODE 1SS133T-77	
D918	8-719-991-33	DIODE 1SS133T-77	
D919	8-719-991-33	DIODE 1SS133T-77	
D920	8-719-991-33	DIODE 1SS133T-77	
D921	8-719-991-33	DIODE 1SS133T-77	
D922	8-719-991-33	DIODE 1SS133T-77	
D923	8-719-991-33	DIODE 1SS133T-77	
D924	8-719-991-33	DIODE 1SS133T-77	
D925	8-719-921-93	DIODE MTZJ-15C	
D926	8-719-921-93	DIODE MTZJ-15C	
		< IC/PHOTO COUPLER >	
IC901	8-719-156-73	PHOTO COUPLER PS2501-1LA	
IC902	8-759-103-87	IC uPC494C	
IC903	8-719-156-73	PHOTO COUPLER PS2501-1LA	
IC904	8-759-103-87	IC uPC494C	
		< PILOT LAMP >	
LA901	1-518-540-00	LAMP, PILOT	
		< TRANSISTOR >	
Q901	8-729-184-53	TRANSISTOR 2SC1845-EA	
Q902	8-729-184-53	TRANSISTOR 2SC1845-EA	
Q903	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q904	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q905	8-729-209-18	TRANSISTOR 2SA1360-Y	
Q906	8-729-203-45	TRANSISTOR 2SC3423-O	
Q907	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q908	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q909	8-729-203-45	TRANSISTOR 2SC3423-O	
Q910	8-729-209-18	TRANSISTOR 2SA1360-Y	
Q911	8-729-173-38	TRANSISTOR 2SA733-K	
Q912	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q913	8-729-048-63	FET FS70SMJ-06	
Q914	8-729-048-62	FET FX50SMJ-06	
Q915	8-729-048-64	FET IRFP140R	
Q916	8-729-048-64	FET IRFP140R	
Q917	8-729-048-64	FET IRFP140R	
Q918	8-729-048-64	FET IRFP140R	
Q919	8-729-048-65	FET IRFP9140	
Q920	8-729-048-65	FET IRFP9140	
Q921	8-729-048-65	FET IRFP9140	
Q922	8-729-048-65	FET IRFP9140	
Q923	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q924	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q925	8-729-184-53	TRANSISTOR 2SC1845-EA	
Q926	8-729-035-83	FET MTP75N06HD	
Q927	8-729-035-83	FET MTP75N06HD	
Q928	8-729-035-83	FET MTP75N06HD	
Q929	8-729-035-83	FET MTP75N06HD	
Q930	8-729-035-83	FET MTP75N06HD	
Q931	8-729-035-83	FET MTP75N06HD	
Q932	8-729-032-94	TRANSISTOR 2SD1859TV2Q	
Q933	8-729-032-94	TRANSISTOR 2SD1859TV2Q	
Q934	8-729-048-66	TRANSISTOR 2SB1238PQR-TV2	
Q935	8-729-048-66	TRANSISTOR 2SB1238PQR-TV2	
Q936	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q937	8-729-035-83	FET MTP75N06HD	
Q938	8-729-035-83	FET MTP75N06HD	
Q939	8-729-035-83	FET MTP75N06HD	
Q940	8-729-035-83	FET MTP75N06HD	
Q941	8-729-035-83	FET MTP75N06HD	
Q942	8-729-035-83	FET MTP75N06HD	
Q943	8-729-032-94	TRANSISTOR 2SD1859TV2Q	
Q944	8-729-032-94	TRANSISTOR 2SD1859TV2Q	
Q945	8-729-048-66	TRANSISTOR 2SB1238PQR-TV2	
Q946	8-729-048-66	TRANSISTOR 2SB1238PQR-TV2	
Q947	8-729-119-78	TRANSISTOR 2SC403SP-51	
		< RESISTOR >	
R901	1-259-452-11	CARBON 10K 5% 1/6W	
R902	1-259-476-11	CARBON 100K 5% 1/6W	
R903	1-249-560-11	CARBON 2.2K 5% 1/4W	
R904	1-259-332-11	CARBON 15K 5% 1/2W	
R905	1-249-596-11	CARBON 68K 5% 1/4W	
R906	1-249-596-11	CARBON 68K 5% 1/4W	
R907	1-249-568-11	CARBON 4.7K 5% 1/4W	
R908	1-249-568-11	CARBON 4.7K 5% 1/4W	
R909	1-247-704-11	CARBON 220 5% 1/4W	
R910	1-247-704-11	CARBON 220 5% 1/4W	
R911	1-259-476-11	CARBON 100K 5% 1/6W	
R912	1-259-476-11	CARBON 100K 5% 1/6W	
R913	1-249-417-11	CARBON 1K 5% 1/4W	
R914	1-249-417-11	CARBON 1K 5% 1/4W	
R915	1-249-417-11	CARBON 1K 5% 1/4W	
R916	1-249-417-11	CARBON 1K 5% 1/4W	
R917	1-249-405-11	CARBON 100 5% 1/4W	
R918	1-249-405-11	CARBON 100 5% 1/4W	
R919	1-249-705-11	CARBON 22K 5% 1/2W	
R920	1-249-705-11	CARBON 22K 5% 1/2W	
R921	1-205-999-11	WIREWOUND 22 5% 5W	
R922	1-205-999-11	WIREWOUND 22 5% 5W	
R923	1-249-504-11	CARBON 10 5% 1/4W	
R924	1-249-504-11	CARBON 10 5% 1/4W	
R925	1-249-504-11	CARBON 10 5% 1/4W	
R926	1-249-504-11	CARBON 10 5% 1/4W	
R927	1-249-504-11	CARBON 10 5% 1/4W	
R928	1-249-504-11	CARBON 10 5% 1/4W	
R929	1-249-504-11	CARBON 10 5% 1/4W	
R930	1-249-504-11	CARBON 10 5% 1/4W	
R931	1-214-789-00	METAL 0.1 10% 5W	
R932	1-214-789-00	METAL 0.1 10% 5W	
R933	1-214-789-00	METAL 0.1 10% 5W	
R934	1-214-789-00	METAL 0.1 10% 5W	
R935	1-214-789-00	METAL 0.1 10% 5W	
R936	1-214-789-00	METAL 0.1 10% 5W	
R937	1-214-789-00	METAL 0.1 10% 5W	
R938	1-214-789-00	METAL 0.1 10% 5W	
R939	1-249-417-11	CARBON 1K 5% 1/4W	
R940	1-249-419-11	CARBON 1.5K 5% 1/4W	
R941	1-249-576-11	CARBON 10K 5% 1/4W	
R942	1-259-452-11	CARBON 10K 5% 1/6W	
R943	1-259-452-11	CARBON 10K 5% 1/6W	

POWER AMP | PRE AMP

Ref. No.	Part No.	Description			Remark
R944	1-249-419-11	CARBON	1.5K	5%	1/4W
R945	1-249-417-11	CARBON	1K	5%	1/4W
R946	1-249-576-11	CARBON	10K	5%	1/4W
R947	1-249-576-11	CARBON	10K	5%	1/4W
R948	1-249-385-11	CARBON	2.2	5%	1/6W
R949	1-249-385-11	CARBON	2.2	5%	1/6W
R950	1-249-385-11	CARBON	2.2	5%	1/6W
R951	1-249-385-11	CARBON	2.2	5%	1/6W
R952	1-249-385-11	CARBON	2.2	5%	1/6W
R953	1-249-385-11	CARBON	2.2	5%	1/6W
R954	1-259-388-11	CARBON	22	5%	1/6W
R955	1-259-388-11	CARBON	22	5%	1/6W
R956	1-249-417-11	CARBON	1K	5%	1/4W
R957	1-249-417-11	CARBON	1K	5%	1/4W
R958	1-249-417-11	CARBON	1K	5%	1/4W
R959	1-249-417-11	CARBON	1K	5%	1/4W
R960	1-215-865-11	METAL OXIDE	220	5%	1W F
R961	1-215-865-11	METAL OXIDE	220	5%	1W F
R962	1-249-407-11	CARBON	150	5%	1/4W
R963	1-249-417-11	CARBON	1K	5%	1/4W
R964	1-249-407-11	CARBON	150	5%	1/4W
R965	1-249-417-11	CARBON	1K	5%	1/4W
R966	1-249-425-11	CARBON	4.7K	5%	1/4W
R967	1-247-815-11	CARBON	220	5%	1/4W
R968	1-249-430-11	CARBON	12K	5%	1/4W
R969	1-259-452-11	CARBON	10K	5%	1/6W
R970	1-259-452-11	CARBON	10K	5%	1/6W
R971	1-247-815-11	CARBON	220	5%	1/4W
R972	1-247-863-11	CARBON	22K	5%	1/4W
R973	1-249-417-11	CARBON	1K	5%	1/4W
R974	1-249-421-11	CARBON	2.2K	5%	1/4W
R975	1-249-421-11	CARBON	2.2K	5%	1/4W
R976	1-249-385-11	CARBON	2.2	5%	1/6W
R977	1-249-385-11	CARBON	2.2	5%	1/6W
R978	1-249-385-11	CARBON	2.2	5%	1/6W
R979	1-249-385-11	CARBON	2.2	5%	1/6W
R980	1-249-385-11	CARBON	2.2	5%	1/6W
R981	1-249-385-11	CARBON	2.2	5%	1/6W
R982	1-259-388-11	CARBON	22	5%	1/6W
R983	1-259-388-11	CARBON	22	5%	1/6W
R984	1-249-417-11	CARBON	1K	5%	1/4W
R985	1-249-417-11	CARBON	1K	5%	1/4W
R986	1-249-417-11	CARBON	1K	5%	1/4W
R987	1-249-417-11	CARBON	1K	5%	1/4W
R988	1-215-865-11	METAL OXIDE	220	5%	1W F
R989	1-215-865-11	METAL OXIDE	220	5%	1W F
R990	1-249-407-11	CARBON	150	5%	1/4W
R991	1-249-417-11	CARBON	1K	5%	1/4W
R992	1-249-407-11	CARBON	150	5%	1/4W
R993	1-249-417-11	CARBON	1K	5%	1/4W
R994	1-249-425-11	CARBON	4.7K	5%	1/4W
R995	1-247-815-91	CARBON	220	5%	1/4W
R996	1-259-452-11	CARBON	10K	5%	1/6W
R997	1-259-452-11	CARBON	10K	5%	1/6W
R998	1-247-815-11	CARBON	220	5%	1/4W
R999	1-247-863-11	CARBON	22K	5%	1/4W
R1000	1-249-417-11	CARBON	1K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R1001	1-249-413-11	CARBON	470	5%	1/4W
R1002	1-249-421-11	CARBON	2.2K	5%	1/4W
R1003	1-249-705-11	CARBON	22K	5%	1/2W
R1004	1-249-705-11	CARBON	22K	5%	1/2W
R1005	1-259-380-11	CARBON	10	5%	1/6W
R1006	1-259-380-11	CARBON	10	5%	1/6W
R1007	1-259-484-11	CARBON	220K	5%	1/6W
R1008	1-259-484-11	CARBON	220K	5%	1/6W
R1009	1-249-430-11	CARBON	12K	5%	1/4W
		< TRANSFORMER >			
T901	1-433-860-11	TRANSFORMER, DC-DC CONVERTER			
T902	1-433-860-11	TRANSFORMER, DC-DC CONVERTER			
		< THERMISTOR >			
TH901	1-808-877-11	THERMISTOR			
TH902	1-808-877-11	THERMISTOR			
TH903	1-808-877-11	THERMISTOR			
TH904	1-808-877-11	THERMISTOR			
TH905	1-808-877-11	THERMISTOR			
TH906	1-808-877-11	THERMISTOR			
TH907	1-809-664-51	THERMISTOR, POSITIVE			
TH908	1-808-877-11	THERMISTOR			
		< VARIABLE RESISTOR >			
VR901	1-241-761-11	RES, ADJ, CARBON 1K			
**********					
*	A-3317-634-A	PRE AMP BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-180-11	ELECT	100uF	20%	16V
C102	1-126-047-11	ELECT	4.7uF	20%	50V
C103	1-126-047-11	ELECT	4.7uF	20%	50V
C104	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C105	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C106	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C107	1-136-167-00	FILM	0.15uF	5%	50V
C108	1-136-167-00	FILM	0.15uF	5%	50V
C109	1-126-008-51	ELECT	47uF	20%	16V
C110	1-126-008-51	ELECT	47uF	20%	16V
C111	1-126-008-51	ELECT	47uF	20%	16V
C112	1-126-006-11	ELECT	22uF	20%	16V
C113	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C114	1-126-044-11	ELECT	1uF	20%	50V
C115	1-126-044-11	ELECT	1uF	20%	50V
C116	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C117	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C118	1-126-008-51	ELECT	47uF	20%	16V
C119	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C201	1-126-180-11	ELECT	100uF	20%	16V
C202	1-126-047-11	ELECT	4.7uF	20%	50V
C203	1-126-047-11	ELECT	4.7uF	20%	50V
C204	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C205	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C206	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C207	1-136-167-00	FILM	0.15uF	5%	50V

Ref. No.	Part No.	Description			Remark
C208	1-136-167-00	FILM	0.15uF	5%	50V
C209	1-126-008-51	ELECT	47uF	20%	16V
C210	1-126-008-51	ELECT	47uF	20%	16V
C211	1-126-008-51	ELECT	47uF	20%	16V
C212	1-126-006-11	ELECT	22uF	20%	16V
C213	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C214	1-126-044-11	ELECT	1uF	20%	50V
C215	1-126-044-11	ELECT	1uF	20%	50V
C216	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C217	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C218	1-126-008-51	ELECT	47uF	20%	16V
C219	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C220	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C801	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C804	1-126-006-11	ELECT	22uF	20%	16V
C805	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C806	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C807	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C808	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C809	1-126-008-51	ELECT	47uF	20%	16V
C810	1-126-008-51	ELECT	47uF	20%	16V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C812	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C815	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C875	1-136-153-00	FILM	0.01uF	5%	50V
		< JACK/CONNECTOR >			
CNJ801	1-766-894-21	JACK 2P (L-LINE, IN-R)			
CNJ802	1-766-894-21	JACK 2P (L-LINE, OUT-R)			
CNJ803	1-793-022-11	CONNECTOR 2P (REMOTE)			
		< DIODE >			
D801	8-719-801-78	DIODE 1SS184			
		< IC >			
IC801	8-759-385-17	IC NJM4580E (TE2)			
IC802	8-759-385-17	IC NJM4580E (TE2)			
IC803	8-759-385-17	IC NJM4580E (TE2)			
IC804	8-759-385-17	IC NJM4580E (TE2)			
IC805	8-759-385-17	IC NJM4580E (TE2)			
IC806	8-759-385-17	IC NJM4580E (TE2)			
IC807	8-759-385-17	IC NJM4580E (TE2)			
IC808	8-759-385-17	IC NJM4580E (TE2)			
		< PILOT LAMP >			
LA801	1-518-540-00	LAMP, PILOT			
		< TRANSISTOR >			
Q101	8-729-203-48	TRANSISTOR 2SC3327-A			
Q104	8-729-203-48	TRANSISTOR 2SC3327-A			
Q201	8-729-203-48	TRANSISTOR 2SC3327-A			
Q204	8-729-203-48	TRANSISTOR 2SC3327-A			
		< RESISTOR >			
R101	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R102	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R103	1-208-518-61	RES,CHIP	22K	2%	1/10W
R104	1-208-518-61	RES,CHIP	22K	2%	1/10W
R105	1-208-518-61	RES,CHIP	22K	2%	1/10W
R106	1-208-518-61	RES,CHIP	22K	2%	1/10W
R107	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R108	1-208-518-61	RES,CHIP	22K	2%	1/10W
R109	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R110	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R111	1-216-671-11	RES,CHIP	6.8K	0.5%	1/10W
R112	1-208-800-11	RES,CHIP	5.6K	0.5%	1/10W
R113	1-216-651-11	RES,CHIP	1K	0.5%	1/10W
R114	1-208-800-11	RES,CHIP	5.6K	0.5%	1/10W
R115	1-216-651-11	RES,CHIP	1K	0.5%	1/10W
R116	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R117	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R118	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R119	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R120	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R121	1-208-361-61	RES,CHIP	68	2%	1/10W
R122	1-208-361-61	RES,CHIP	68	2%	1/10W
R123	1-216-242-00	RES,CHIP	68K	5%	1/8W
R124	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R125	1-216-665-11	RES,CHIP	3.9K	0.5%	1/10W
R126	1-216-665-11	RES,CHIP	3.9K	0.5%	1/10W
R127	1-208-789-11	RES,CHIP	2K	0.5%	1/10W
R128	1-216-663-11	RES,CHIP	3.3K	0.5%	1/10W
R129	1-208-760-11	RES,CHIP	120	0.5%	1/10W
R130	1-208-462-61	RES,CHIP	10K	2%	1/10W
R137	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R138	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R139	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R141	1-208-361-61	RES,CHIP	68	2%	1/10W
R142	1-216-242-00	RES,CHIP	68K	5%	1/8W
R201	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R202	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R203	1-208-518-61	RES,CHIP	22K	2%	1/10W
R204	1-208-518-61	RES,CHIP	22K	2%	1/10W
R205	1-208-518-61	RES,CHIP	22K	2%	1/10W
R206	1-208-518-61	RES,CHIP	22K	2%	1/10W
R207	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R208	1-208-518-61	RES,CHIP	22K	2%	1/10W
R209	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R210	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R211	1-216-671-11	RES,CHIP	6.8K	0.5%	1/10W
R212	1-208-800-11	RES,CHIP	5.6K	0.5%	1/10W
R213	1-216-651-11	RES,CHIP	1K	0.5%	1/10W
R214	1-208-800-11	RES,CHIP	5.6K	0.5%	1/10W
R215	1-216-651-11	RES,CHIP	1K	0.5&	1/10W
R216	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R217	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R218	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R219	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R220	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R221	1-208-361-61	RES,CHIP	68	2%	1/10W
R222	1-208-361-61	RES,CHIP	68	2%	1/10W
R223	1-216-242-00	RES,CHIP	68K	5%	1/8W
R224	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W

PRE AMP | PROTECT

Ref. No.	Part No.	Description			Remark
R225	1-216-665-11	RES,CHIP	3.9K	0.5%	1/10W
R226	1-216-665-11	RES,CHIP	3.9K	0.5%	1/10W
R227	1-208-789-11	RES,CHIP	2K	0.5%	1/10W
R228	1-216-663-11	RES,CHIP	3.3K	0.5%	1/10W
R229	1-208-760-11	RES,CHIP	120	0.5%	1/10W
R230	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R237	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R238	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R239	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R240	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R241	1-208-361-61	RES,CHIP	68	2%	1/10W
R242	1-216-242-00	RES,CHIP	68K	5%	1/8W
R801	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R802	1-208-774-11	RES,CHIP	470	2%	1/10W
R803	1-208-453-61	RES,CHIP	4.7K	2%	1/10W
R804	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R805	1-208-291-11	RES,CHIP	4.7M	5%	1/10W
R806	1-208-291-11	RES,CHIP	4.7M	5%	1/10W
R807	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R808	1-208-518-61	RES,CHIP	22K	2%	1/10W
R809	1-208-539-11	RES,CHIP	160K	2%	1/10W
R810	1-208-539-11	RES,CHIP	160K	2%	1/10W
R811	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R812	1-208-453-61	RES,CHIP	4.7K	2%	1/10W
R813	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
R814	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R815	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R816	1-208-806-11	RES,CHIP	10K	0.5%	1/10W
		< SWITCH >			
S101	1-692-219-11	SWITCH, SLIDE (FILTER, LEFT)			
S102	1-571-729-11	SWITCH, SLIDE (DIRECT, LEFT)			
S201	1-692-219-11	SWITCH, SLIDE (FILTER, RIGHT)			
S202	1-571-729-11	SWITCH, SLIDE (DIRECT, RIGHT)			
S801	1-771-700-11	SWITCH, TACTILE (TEST TONE)			
S802	1-692-219-11	SWITCH, SLIDE (FILTER)			
		< VARIABLE RESISTOR >			
VR101	1-225-834-11	RES, VAR 20K (L FILTER FREQ)			
VR102	1-225-834-11	RES, VAR 20K (L BOOST FREQ)			
VR103	1-225-833-11	RES, VAR 5K (L BOOST LEVEL)			
VR104	1-225-833-11	RES, VAR 5K (L LEVEL)			
VR201	1-225-834-11	RES, VAR 20K (R FILTER FREQ)			
VR202	1-225-834-11	RES, VAR 20K (R BOOST FREQ)			
VR203	1-225-833-11	RES, VAR 5K (R BOOST LEVEL)			
VR204	1-225-833-11	RES, VAR 5K (R LEVEL)			

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*	1-673-467-11	PROTECT BOARD			
		**********			
		< CAPACITOR >			
C851	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C852	1-126-947-11	ELECT	47uF	20%	35V
C853	1-126-965-11	ELECT	22uF	20%	50V
C854	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C855	1-126-965-11	ELECT	22uF	20%	50V
C856	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C857	1-107-694-11	ELECT	22uF	20%	16V
C858	1-107-694-11	ELECT	22uF	20%	16V
C859	1-126-933-11	ELECT	100uF	20%	16V
C860	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C861	1-126-965-11	ELECT	22uF	20%	50V
C862	1-126-965-11	ELECT	22uF	20%	50V
C863	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C864	1-130-491-00	MYLAR	0.047uF	5%	50V
C865	1-130-491-00	MYLAR	0.047uF	5%	50V
C866	1-128-230-11	ELECT	100uF	20%	80V
C867	1-128-230-11	ELECT	100uF	20%	80V
C868	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C869	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C870	1-126-933-11	ELECT	100uF	20%	16V
C871	1-126-933-11	ELECT	100uF	20%	16V
C872	1-107-694-11	ELECT	22uF	20%	16V
C873	1-126-925-11	ELECT	470uF	20%	10V
C874	1-126-965-11	ELECT	22uF	20%	50V
		< CONNECTOR >			
* CNP804	1-564-513-11	PLUG, CONNECTOR 10P			
CNP807	1-779-992-11	PIN, CONNECTOR (PWD) 8P			
* CNP810	1-564-505-11	PLUG, CONNECTOR 2P			
* CNP811	1-564-505-11	PLUG, CONNECTOR 2P			
		< DIODE >			
D856	8-719-230-04	DIODE 30D4			
D857	8-719-230-04	DIODE 30D4			
D858	8-719-043-82	DIODE 02CZ5.1Y-TE85L			
D859	8-719-025-49	DIODE 02CZ15-TE85L			
D860	8-719-801-78	DIODE 1SS184			
D861	8-719-820-05	DIODE 1SS181			
D862	8-719-987-67	DIODE 11EFS2			
D863	8-719-987-67	DIODE 11EFS2			
D864	8-719-210-21	DIODE 11EQS04			
D865	8-719-210-21	DIODE 11EQS04			
D866	8-719-210-21	DIODE 11EQS04			
D867	8-719-210-21	DIODE 11EQS04			
D868	8-719-987-67	DIODE 11EFS2			
D869	8-719-987-67	DIODE 11EFS2			
D870	8-719-801-78	DIODE 1SS184			
D871	8-719-025-34	DIODE 02CZ6.8-TE85L			
D872	8-719-110-17	DIODE RD10ESB2			
D873	8-719-801-78	DIODE 1SS184			
D874	8-719-801-78	DIODE 1SS184			
D875	8-719-423-32	DIODE MA8120-M			
		< PHOTO COUPLER >			
IC851	8-719-156-73	PHOTO COUPLER PS2501-1LA			
IC852	8-719-156-73	PHOTO COUPLER PS2501-1LA			
		< COIL >			
L851	1-410-396-71	INDUCTOR 0.45uH			
		< TRANSISTOR >			
Q102	8-729-203-48	TRANSISTOR 2SC3327-A			
Q103	8-729-203-48	TRANSISTOR 2SC3327-A			

Ref. No.	Part No.	Description		Remark
Q202	8-729-203-48	TRANSISTOR	2SC3327-A	
Q203	8-729-203-48	TRANSISTOR	2SC3327-A	
Q851	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q852	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q853	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q854	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q855	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q856	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q857	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q858	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q859	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q860	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q861	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q862	8-729-216-21	TRANSISTOR	2SA1162-Y	
Q863	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q864	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q865	8-729-141-83	TRANSISTOR	2SB1094-LK	
Q866	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q867	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q868	8-729-271-32	TRANSISTOR	2SC2713-L	
Q869	8-729-216-31	TRANSISTOR	2SA1163-G	
Q870	8-729-216-31	TRANSISTOR	2SA1163-G	
Q871	8-729-205-88	TRANSISTOR	2SC3074-Y	
Q872	8-729-205-88	TRANSISTOR	2SC3074-Y	
Q873	8-729-141-83	TRANSISTOR	2SB1094-LK	
Q874	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q875	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q876	8-729-230-49	TRANSISTOR	2SC2712-YG	
Q877	8-729-207-89	TRANSISTOR	2SA1358-Y	

< RESISTOR >

R131	1-208-462-61	RES,CHIP	10K	2%	1/10W
R132	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R133	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R134	1-216-242-00	RES,CHIP	68K	5%	1/8W
R135	1-216-242-00	RES,CHIP	68K	5%	1/8W
R136	1-216-113-00	METAL CHIP	470K	5%	1/10W
R231	1-208-462-61	RES,CHIP	10K	2%	1/10W
R232	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R233	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R234	1-216-242-00	RES,CHIP	68K	5%	1/8W
R235	1-216-242-00	RES,CHIP	68K	5%	1/8W
R236	1-216-113-00	METAL CHIP	470K	5%	1/10W
R845	1-208-462-61	RES,CHIP	10K	2%	1/10W
R846	1-208-437-61	RES,CHIP	1K	2%	1/10W
R847	1-208-518-61	RES,CHIP	22K	2%	1/10W
R848	1-208-437-61	RES,CHIP	1K	2%	1/10W
R849	1-208-449-61	RES,CHIP	3.3K	2%	1/10W
R851	1-208-462-61	RES,CHIP	10K	2%	1/10W
R852	1-208-462-61	RES,CHIP	10K	2%	1/10W
R853	1-216-121-91	RES,CHIP	1M	5%	1/10W
R854	1-208-462-61	RES,CHIP	10K	2%	1/10W
R855	1-208-462-61	RES,CHIP	10K	2%	1/10W
R856	1-208-462-61	RES,CHIP	10K	2%	1/10W
R857	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R858	1-208-526-61	RES,CHIP	47K	2%	1/10W
R859	1-208-462-61	RES,CHIP	10K	2%	1/10W
R860	1-208-462-61	RES,CHIP	10K	2%	1/10W
R861	1-208-462-61	RES,CHIP	10K	2%	1/10W
R862	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R863	1-208-462-61	RES,CHIP	10K	2%	1/10W
R864	1-208-462-61	RES,CHIP	10K	2%	1/10W
R865	1-260-101-11	CARBON	1.5K	5%	1/2W
R866	1-260-101-11	CARBON	1.5K	5%	1/2W
R867	1-260-101-11	CARBON	1.5K	5%	1/2W
R868	1-208-462-61	RES,CHIP	10K	2%	1/10W
R869	1-208-462-61	RES,CHIP	10K	2%	1/10W
R870	1-208-518-61	RES,CHIP	22K	2%	1/10W
R871	1-208-518-61	RES,CHIP	22K	2%	1/10W
R872	1-208-518-61	RES,CHIP	22K	2%	1/10W
R873	1-216-206-00	RES,CHIP	2.2K	5%	1/8W
R874	1-260-099-11	CARBON	1K	5%	1/2W
R875	1-260-099-11	CARBON	1K	5%	1/2W
R876	1-208-462-61	RES,CHIP	10K	2%	1/10W
R877	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R878	1-208-462-61	RES,CHIP	10K	2%	1/10W
R879	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R880	1-216-210-00	RES,CHIP	3.3K	5%	1/8W
R881	1-208-449-61	RES,CHIP	3.3K	2%	1/10W
R882	1-216-194-00	METAL CHIP	680	5%	1/8W
R883	1-216-194-00	METAL CHIP	680	5%	1/8W
R884	1-216-186-00	RES,CHIP	330	5%	1/8W
R885	1-249-425-11	CARBON	4.7K	5%	1/4W
R886	1-249-429-11	CARBON	10K	5%	1/4W
R887	1-216-294-00	METAL CHIP	10M	5%	1/8W
R888	1-208-518-61	RES,CHIP	22K	2%	1/10W
R889	1-208-518-61	RES,CHIP	22K	2%	1/10W
R890	1-216-093-91	RES,CHIP	68K	5%	1/10W
R891	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R892	1-216-242-00	RES,CHIP	68K	5%	1/8W
R893	1-216-242-00	RES,CHIP	68K	5%	1/8W
R894	1-216-097-00	RES,CHIP	100K	5%	1/10W
R895	1-208-365-61	RES,CHIP	100	2%	1/10W
R896	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R897	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R898	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R899	1-208-518-61	RES,CHIP	22K	2%	1/10W

< TRANSFORMER >

T851	1-433-861-11	TRANSFORMER, DC-DC CONVERTER			

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MISCELLANEOUS
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C947	1-136-177-00	CAP, METALIZED FILM	1uF	5%	50V
C948	1-136-177-00	CAP, METALIZED FILM	1uF	5%	50V
CN812	1-694-490-11	TERMINAL BOARD (SP)			
CN813	1-694-490-11	TERMINAL BOARD (SP)			
CN814	1-694-489-11	TERMINAL BOARD (BATT)			
M810	1-698-380-11	MOTOR, FAN (DC)			
M811	1-698-380-11	MOTOR, FAN (DC)			
SW851	1-576-323-11	BREAKER, CIRCUIT			
SW852	1-576-323-11	BREAKER, CIRCUIT			

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Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-549-19	SCREW +BTP 3X14 TYPE2 N-S	
#2	7-682-549-09	SCREW +B 3X10	
#3	7-685-132-19	SCREW +P 2.6X5 TYPE2 NON-SLIT	
#4	7-685-144-19	SCREW +P 3X5 TYPE2 NON-SLIT	
#5	7-685-659-79	SCREW +BVTP 4X8 TYPE2 IT-3	
#6	7-685-751-09	SCREW +PTT 3X6 (S)	
#7	7-685-546-19	SCREW +BTP 3X8 TYPE2 N-S	
#8	7-685-645-79	SCREW +BVTP 3X6 TYPE2 IT-3	
#9	7-685-661-91	SCREW +BVTP 4X12 TYPE2 TT (B)	
#10	7-682-248-09	SCREW +K 3X8	
#11	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3	
#12	7-682-546-04	SCREW +B 3X5	
#13	7-682-553-09	SCREW +B 3X20	
#14	7-685-146-11	SCREW +P 3X8 TYPE2 NON-SLIT	
#15	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#16	7-682-949-09	SCREW +PSW 3X10	
#17	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	3-035-780-01	WRENCH (POWER), HEXAGON (for SCREW (POWER))	
	3-035-781-01	WRENCH (SP), HEXAGON (for SCREW (SP))	
	3-367-410-01	SCREW (DIA. 5X15), TAPPING	
	3-865-192-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	
	3-865-192-21	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (AEP, UK, German)	
	3-865-192-31	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (AEP, UK, German)	
	3-865-192-41	MANUAL, INSTRUCTION (DUTCH, SWEDISH) (AEP, UK, German)	
	3-866-389-01	INSTRUCTION (US, Canadian)	

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